by Raeuschel (1797) as having been proposed by Linnaeus. It seems most probable that what Raeuschel intended to say was *E. fasciculatum* Lam., published in 1789 and now regarded as *Paepalanthus lamarckii* Kunth, which see.

ERIOCAULON FISTULOSUM R. Br.

Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 313 (1821) and ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 571 & 613. 1841; D. Dietr., Syn. Pl. 5: 266. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 269 & 334. 1855; Körn., Linnaea 27: 583 & 587. 1856; Moldenke, Phytologia 19: 336. 1970.

ERIOCAULON FULIGINOSUM C. Wright

Additional & emended bibliography: Moldenke, Phytologia 1: 317, 350, 352, 353, 355, 356, 358, 360, 361, & 363. 1939; Standl. & Steyerm., Fieldiana Bot. 24: 375 & 376. 1958; Moldenke, Phytologia 19: 336. 1970.

ERIOCAULON GIBBOSUM Körn.

Additional & emended bibliography: Körn., Linnaea 27: 600. 1856; Körn. in Mart., Fl. Bras. 3 (1): 293, 489--490, 500, & 507, pl. 61, fig. 1. 1863; Moldenke, Phytologia 2: 374 & 378. 1947; Moldenke, Biol. Abstr. 50: 12948. 1969; Moldenke, Phytologia 19: 336--337. 1970.

Additional citations: BRAZIL: Pará: *Sick B.878a* (Rf).

ERIOCAULON GOMPHRENOIDES Kunth

Additional & emended bibliography: Kunth, Enum. Pl. 3: 548 & 613. 1841; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 269--270 & 334. 1855; Körn., Linnaea 27: 599. 1856; Körn. in Mart., Fl. Bras. 3 (1): 481--482 & 506. 1863; Moldenke, Phytologia 19: 42. 1969.

ERIOCAULON GUYANENSE Körn.

Emended synonymy: *Eriocaulon guianense* Körn., Linnaea 27: 588. 1856 [not *E. guianense* A. Dietr., 1855].

Additional bibliography: Steud., Syn. Pl. Glum. 2: [Cyp.] 269 & 334. 1855; Körn., Linnaea 27: 588. 1856; Körn. in Mart., Fl. Bras. 288, 291, 475, 478, & 507. 1863; Moldenke, Phytologia 2: 373 (1947) and 19: 337 & 447. 1970.

The *E. guianense* accredited to A. Dietrich is a synonym of *E. humboldtii* Kunth.

ERIOCAULON HAMILTONIANUM Mart.

Emended synonymy: *Eriocaulon cinereum* Hamilt. ex Wall., Numer. List 207, in syn. 1832 [not *E. cinereum* Bong., 1841, nor R. Br., 1810, nor Merr., 1940].

Additional & emended bibliography: Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 552 & 613. 1841; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 270 & 334. 1855; Körn., Linnaea 27: 581--583, 586, 679--680, & 683. 1856;

Körn. in Mart., Fl. Bras. 3 (1): 285 & 480. 1863; Moldenke, Phytologia 19: 337 & 476. 1970.

ERIOCAULON HETEROLEPIS Steud.

Additional & emended bibliography: Steud., Syn. Pl. Glum. 2: [Cyp.] 271 & 334. 1855; Körn., Linnaea 27: 581, 585, & 652. 1856; Moldenke, Phytologia 19: 338, 347, 418, 420, & 477. 1970.

ERIOCAULON HETEROMALLUM Bong.

Synonymy: *Eriocaulon heteromallum* Kunth ex Steud., Syn. Pl. Glum. 2: [Cyp.] 279 & 334. 1855.

Additional & emended bibliography: Kunth, Enum. Pl. 3: 574 & 613. 1841; D. Dietr., Syn. Pl. 5: 267. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 279 & 334. 1855; Moldenke, Phytologia 18: 179. 1969.

ERIOCAULON HOOKERIANUM Stapf

Additional synonymy: *Eriocaulon macrophyllum* Ridl., Journ. Fed. Malay States Mus. 6: 191, in syn. 1915 [not *E. macrophyllum* Ruhl., 1903].

Additional bibliography: H. N. Ridl., Journ. Linn. Soc. Lond. Bot. 38: 332. 1908; K. U. Kramer, Excerpt. Bot. A.6: 33. 1963; Moldenke, Phytologia 19: 338, 416, 417, & 464. 1970.

ERIOCAULON HUMBOLDTII Kunth

Additional synonymy: *Eriocaulon decangulare* Humb. & Bonpl. ex Bong., Ess. Monog. Erioc. 8 & 30. 1831. *Eriocaulon decemangulare* Humb. & Kunth apud Kunth, Enum. Pl. 3: 544 & 613. 1841. *Eriocaulon decemangulare* Humb. & Bonpl. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 268 & 333. 1855. *Eriocaulon guianense* A. Dietr. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 269 & 333, in syn. 1855 [not *E. guianense* Körn., 1856].

Additional & emended bibliography: Bong., Ess. Monog. Erioc. 8 & 30. 1831; Kunth, Enum. Pl. 3: 544--545 & 613. 1841; Schomb., Reise Brit.-Guian. 3: 1064. 1848; Schomb., Vers. Fauna & Fl. Brit.-Guian. 3: 1064. 1848; D. Dietr., Syn. Pl. 5: 263. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 268, 269, 333, & 334. 1855; Körn., Linnaea 27: 601. 1856; Körn. in Mart., Fl. Bras. 3 (1): 476, 497, 498, & 507. 1863; Moldenke, Phytologia 2: 374. 1947; J. A. Steyerm., Act. Bot. Venez. 3: 96. 1969; Moldenke, Phytologia 19: 338--339 & 456. 1970.

ERIOCAULON INFIRMUM Steud.

Additional synonymy: *Eriocaulon gracile* Mart. & Wall. ex D. Dietr., Syn. Pl. 5: 264. 1852.

Additional & emended bibliography: Steud., Nom. Bot., ed. 2, 1: 575 & 586. 1840; Kunth, Enum. Pl. 3: 558--559 & 613. 1841; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 271 & 334. 1855; Körn., Linnaea 27: 581, 582, 585, 655--656, 658, 661, & 682. 1856; Körn. in Mart., Fl. Bras. 3 (1): 290, 292,

& 298. 1863; Moldenke, Phytologia 19: 337, 339—340, 478, & 491. 1970.

ERIOCAULON KINABALUENSE Van Royen

Additional synonymy: *Eriocaulon acaule* Fosberg, Govt. Sarawak Sympos. Ecol. Res. Humid Trop. Veg. 286, nom. nud. 1965 [not *E. acaule* Pennell, 1959].

Additional bibliography: K. U. Kramer, Excerpt. Bot. A.6: 33. 1963; F. R. Fosberg, Govt. Sarawak Sympos. Ecol. Res. Humid Trop. Veg. 286. 1965; Moldenke, Phytologia 19: 341. 1970.

Eriocaulon acaule Fosberg was previously regarded by me as a synonym of *E. brevipedunculatum* Merr., but apparently this disposition was incorrect. Fosberg (1965) says of it "forming hard cushions on hard granite slopes with sparse vegetation, 12,000 feet on Kinabalou South or South Peak".

ERIOCAULON KINLOCHII Moldenke

Additional & emended bibliography: Moldenke, Phytologia 1: 318, 350, & 357. 1939; Standl. & Steyerm., Fieldiana Bot. 24: 375 & 376. 1958; Moldenke, Phytologia 18: 248—249. 1969.

ERIOCAULON LANCEOLATUM Miq.

Additional & emended bibliography: Steud., Syn. Pl. Glum. 2: [Cyp.] 271--272 & 334. 1855; Körn., Linnaea 27: 581, 585, 656—658, & 661. 1856; Moldenke, Phytologia 19: 341 & 477. 1970.

ERIOCAULON LATIFOLIUM J. Sm.

Additional bibliography: Steud., Syn. Pl. Glum. 2: [Cyp.] 273 & 334. 1855; Körn., Linnaea 27: 605 & 666--667. 1856; Moldenke, Phytologia 19: 324, 341—342, 445, 485, & 486. 1970.

ERIOCAULON LEPTOPHYLLUM Kunth

Additional & emended bibliography: Kunth, Enum. Pl. 3: 549 & 613. 1841; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 270 & 334. 1855; Körn., Linnaea 27: 600. 1856; Körn. in Mart., Fl. Bras. 3 (1): 476, 494, & 506. 1863; Moldenke, Phytologia 2: 374, 375, 377, & 381 (1947) and 19: 73. 1969.

ERIOCAULON LEUCOMELAS Steud.

Additional synonymy: *Eriocaulon nigrescens* A. Dietr. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 272 & 334. 1855.

Additional & emended bibliography: Kunth, Enum. Pl. 3: 568 & 613. 1841; Steud., Syn. Pl. Glum. 2: [Cyp.] 272 & 334. 1855; Körn., Linnaea 27: 585, 647—649, 652, & 797. 1856; Körn. in Mart., Fl. Bras. 3 (1): 293. 1863; Moldenke, Phytologia 19: 342 & 464. 1970.

ERIOCAULON LIGULATUM (Vell.) L. B. Sm.

Additional & emended bibliography: Körn. in Mart., Fl. Bras. 3 (1): 482—484 & 507. 1863; Moldenke, Phytologia 3: 142 (1949) and

19: 342. 1970.
Additional citations: BRAZIL: Paraná: *Hatschbach 11320* (Ac).

ERIOCAULON LINEARE Small
Additional & emended bibliography: Moldenke, Phytologia 1: 318--319, 349, 350, 352, 354, 356, 360, & 363 (1939), 2: 491 (1948), and 3: 80. 1949; Eleuterius & Jones, Rhodora 71: 31. 1969; Moldenke, Phytologia 19: 342 & 460. 1970.

ERIOCAULON LUZULAEFOLIUM Mart.
Additional & emended bibliography: Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 553--555 & 613. 1841; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 270 & 334. 1855; Körn., Linnaea 27: 581, 585, & 636--637. 1856; Körn. in Mart., Fl. Bras. 3 (1): 503. 1863; Moldenke, Phytologia 2: 375 (1947) and 19: 342--343, 473, & 475--478. 1970.

ERIOCAULON MACROPHYLLUM Ruhl.
Additional & emended bibliography: H. N. Ridl., Journ. Linn. Soc. Lond. Bot. 38: 332. 1908; Moldenke, Phytologia 19: 77 (1969) and 19: 416 & 417. 1970.

ERIOCAULON MELANOCEPHALUM Kunth
Additional & emended bibliography: Kunth, Enum. Pl. 3: 549 & 613. 1841; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 270 & 334. 1855; Körn., Linnaea 27: 578 & 601. 1856; Körn. in Mart., Fl. Bras. 3 (1): 298, 476, 498--501, & 506, pl. 63. 1863; Moldenke, Phytologia 1: 319, 351, 357, & 363 (1939), 2: 374 (1947), 3: 142 & 180 (1949), and 19: 346. 1970.

ERIOCAULON MICROCEPHALUM H.B.K.
Emended synonymy: *Eriocaulon microcephalum* Humb. & Kunth ex Kunth, Enum. Pl. 3: 548, 572, & 613. 1841 [not *E. microcephalum* Cham. & Schlecht., 1893, nor Hook. & Arn., 1854, nor Sellow, 1959].
Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 313 (1821) and ed. 2, 1: 585 & 586. 1840; Kunth, Enum. Pl. 3: 548, 572, 613, & 614. 1841; D. Dietr., Syn. Pl. 5: 263--264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 269 & 334. 1855; Körn., Linnaea 27: 600. 1856; Körn. in Mart., Fl. Bras. 3 (1): 470, 492, 502, 505, & 508. 1863; Moldenke, Phytologia 1: 316, 320, 350, 351, 357, 358, 360--362, & 364 (1939), 2: 134 & 491 (1948), and 19: 347. 1970.
It is of interest to note that Steudel (1840) lists *E. triangulare* L. both as a valid species (p. 586) and as a synonym of *E. microcephalum* (p. 585).

ERIOCAULON MINIMUM Lam.
Additional synonymy: *Eriocaulon sexangulare* Burm. ex Steud., Nom. Bot., ed. 2, 1: 585 & 586, in syn. 1840.
Additional bibliography: Steud., Nom. Bot. Phan., ed. 1, 313

(1821) and ed. 2, 1: 585 & 586. 1840; Kunth, Enum. Pl. 3: 551 & 613. 1841; Steud., Syn. Pl. Glum. 2: [Cyp.] 268 & 334. 1855; Körn., Linnaea 27: 585, 616, & 634—635. 1856; Körn. in Mart., Fl. Bras. 3 (1): 285. 1863; Moldenke, Phytologia 19: 339 & 347. 1970.

It is of interest to note that Steudel, in his 1821 work, reduces *E. minimum* to synonymy under *E. sexangulare* L., but in his 1840 work reinstates it as a valid species with "*E. sexangulare* Burm." as a synonym.

ERIOCAULON MODESTUM Kunth

Additional & emended bibliography: Kunth, Enum. Pl. 3: 547 & 613. 1841; D. Dietr., Syn. Pl. 5: 263. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 269, 280. & 334. 1855; Körn., Linnaea 27: 600. 1856; Körn. in Mart., Fl. Bras. 3 (1): 286, 476, 493, 500, & 507, pl. 62, fig. 2. 1863; Moldenke, Phytologia 2: 374 & 375 (1947), 3: 80 (1949), and 19: 347. 1970.

ERIOCAULON NANUM R. Br.

Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 313 (1821) and ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 571 & 613. 1841; D. Dietr., Syn. Pl. 5: 266. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 273 & 334. 1855; Körn., Linnaea 27: 580, 584, & 618. 1856; Körn. in Mart., Fl. Bras. 3 (1): 291. 1863; Moldenke, Phytologia 19: 348. 1970.

ERIOCAULON NEGLECTUM Ruhl.

Additional bibliography: Moldenke, Phytologia 18: 325. 1969.

Additional citations: BRAZIL: Mattogrosso: *Hatschbach & Guimarães 21848* (Z).

ERIOCAULON NEPALENSE Prescott

Emended synonymy: *Eriocaulon nepalense* Bong. ex Steud., Nom. Bot., ed. 2, 1: 585. 1840. *Eriocaulon quinquangulare* Wall. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 270 & 334, in syn. 1855 [not *E. quinquangulare* Bojer, 1964, nor Heyne, 1832, nor L., 1743, nor Mart., 1854, nor Wight, 1832, nor Willd., 1959]. *Eriocaulon nepalense* Kunth ex Körn., Linnaea 27: 637, in syn. 1856. *Eriocaulon viride* Körn., Linnaea 27: 581, 585, & 637—639. 1856.

Additional & emended bibliography: Bong., Ess. Monog. Erioc. 10 & 13. 1831; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 554—555 & 613. 1841; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 270 & 334. 1855; Körn., Linnaea 27: 581, 585, & 637—639. 1856; Körn. in Mart., Fl. Bras. 3 (1): 503. 1863; Körn. in Miq., Ann. Mus. Bot. Lugd. 3: 163. 1867; Moldenke, Phytologia 2: 493. 1948; Moldenke, Biol. Abstr. 50: 12949 (1969) and 51: 459. 1970; Moldenke, Phytologia 19: 348, 418, 420, & 476. 1970.

ERIOCAULON NILAGIRENSE Steud.

Additional synonymy: *Eriocaulon nilagiricum* Steud., Syn. Pl.

Glum. 2: [Cyp.] 334, sphalm. 1855.
Additional & emended bibliography: Steud., Syn. Pl. Glum. 2: [Cyp.] 271 & 334. 1855; Körn., Linnaea 27: 585 & 661—663. 1856; Körn. in Mart., Fl. Bras. 3 (1): 505. 1863; Moldenke, Phytologia 2: 377 (1947) and 19: 348, 412, & 491. 1970.

ERIOCAULON ODORATUM Dalz.
Additional & emended bibliography: Körn., Linnaea 27: 581, 583, 586, & 683—684. 1856; Körn. in Mart., Fl. Bras. 3 (1): 508. 1863; Moldenke, Phytologia 19: 349. 1970.

ERIOCAULON ORYZETORUM Mart.
Additional & emended bibliography: Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 552 & 613. 1841; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 270 & 334. 1855; Körn., Linnaea 27: 583, 585, & 639—641. 1856; Körn. in Mart., Fl. Bras. 3 (1): 501 & 503. 1863; Moldenke, Phytologia 2: 493. 1948; Moldenke, Alph. List Cit. 2: 461 (1948) and 4: 1102. 1949; Moldenke, Phytologia 19: 85 & 91 (1969) and 19: 424 & 447. 1970.

ERIOCAULON PALLIDUM R. Br.
Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 313 (1821) and ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 570 & 613. 1841; D. Dietr., Syn. Pl. 5: 265. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 273 & 334. 1855; Körn., Linnaea 27: 581, 585, & 635. 1856; Körn. in Mart., Fl. Bras. 3 (1): 285, 286, & 291. 1863; Moldenke, Phytologia 19: 349. 1970.

ERIOCAULON PALUSTRE Salzm.
Additional & emended bibliography: Steud., Syn. Pl. Glum. 2: [Cyp.] 280 & 334. 1855; Körn., Linnaea 27: 599. 1856; Körn. in Mart., Fl. Bras. 3 (1): 288, 291, 475, 480, 500, & 506, pl. 61, fig. 1. 1863; Moldenke, Phytologia 19: 349. 1970.

ERIOCAULON PANAMENSE Moldenke
Additional & emended bibliography: Moldenke, Phytologia 1: 321, 350, 357, & 363. 1939; Moldenke, Alph. List Cit. 1: 326 (1946), 2: 609 (1948), and 4: 1141. 1949; Moldenke, Phytologia 18: 366. 1969.

ERIOCAULON PARKERI B. L. Robinson
Additional & emended bibliography: Moldenke, Phytologia 1: 321, 348, 349, 353—360, 362, & 363 (1939), 2: 491 (1948), and 3: 80. 1949; Lehr, Bull. Torr. Bot. Club 96: 721. 1969; Moldenke, Phytologia 19: 349—350. 1970.
Additional citations: VIRGINIA: Nansemond Co.: _Fernald, Long, & Clement 15238_ (Mi).

ERIOCAULON PELLUCIDUM Michx.
Additional synonymy: _Eriocaulon plukenetianum_ Bong. ex Körn. in

Mart., Fl. Bras. 3 (1): 474. 1863.

Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 313. 1821; Bong., Ess. Monog. Erioc. 4, 16, & 17. 1831; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 540, 541, 559, & 613. 1841; Steud., Syn. Pl. Glum. 2: [Cyp.] 268 & 334. 1855; Körn., Linnaea 27: 588—590. 1856; Körn. in Mart., Fl. Bras. 3 (1): 474. 1863; Robinson & Fern., Rhodora 11: 40. 1909; Fassett, Man. Aquat. Pl., ed. 2, 169. 1969; Moldenke, Phytologia 19: 409. 1970.

Gillet & Findlay describe this plant as common in floating bogs in Labrador, with white flowers, blooming there in July.

Additional citations: LABRADOR: Gillet & Findlay 5471 (N). QUEBEC: Pontiac Co.: Marie-Victorin, Rolland-Germain, & Blain 124 (Mi).

ERIOCAULON PLUMALE subsp. KINDIAE (H. Lecomte) Meikle

Additional bibliography: Hocking, Excerpt. Bot. A.6: 455. 1963; Moldenke, Biol. Abstr. 42: 1517. 1963; Anon., Assoc. Etud. Tax. Fl. Afr. Trop. Index 1962: 29. 1963; Moldenke, Phytologia 19: 410. 1970.

Additional citations: REPUBLIC OF GUINEA: Boismare 385 [Herb. Chillou 3903] (An); Chillou 644 (An), 717 (Rf).

ERIOCAULON PUBIGERUM Bong.

Additional & emended bibliography: Bong., Ess. Monog. Erioc. 28. 1831; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 575 & 614. 1841; D. Dietr., Syn. Pl. 5: 267. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 279 & 334. 1855; Moldenke, Phytologia 18: 425. 1969.

ERIOCAULON PULCHELLUM Körn.

Additional & emended bibliography: Körn., Linnaea 27: 580, 585, & 621—624. 1856; Körn. in Mart., Fl. Bras. 3 (1): 283. 1863; Moldenke, Phytologia 19: 410 & 468. 1970.

ERIOCAULON PUSILLUM R. Br.

Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 313 (1821) and ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 571 & 614. 1841; D. Dietr., Syn. Pl. 5: 266. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 273 & 334. 1855; Körn., Linnaea 27: 580, 585, 616, 618, & 621. 1856; Körn. in Mart., Fl. Bras. 3 (1): 283. 1863; Moldenke, Phytologia 19: 410.1970.

ERIOCAULON PYGMAEUM Soland.

Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 313 (1821) and ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 570 & 613. 1841; D. Dietr., Syn. Pl. 5: 265—266. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 273 & 334. 1855; Körn., Linnaea 27: 584 & 617—618. 1856; Körn. in Mart., Fl. Bras. 3 (1): 286 & 291. 1863; Moldenke, Phytologia 19: 410. 1970.

ERIOCAULON QUINQUANGULARE L.

Additional & emended synonymy: *Eriocaulon argyraeum* Steud., Nom. Bot., ed. 2, 1: 585. 1840. *Eriocaulon triangulare* Bernhardi ex Kunth, Enum. Pl. 3: 557 & 614, in syn. 1841 [not *E. triangulare* L., 1762]. *Eriocaulon argenteum* Wight ex Kunth, Enum. Pl. 3: 557 & 612, in syn. 1841. *Eriocaulon argenteum* Mart. & Wall. ex D. Dietr., Syn. Pl. 5: 264. 1852. *Eriocaulon quinquangulare e Nepalia* Wall. ex Kunth, Enum. Pl. 3: 614, in syn. 1841.

Additional & emended bibliography: Henckel, Nom. Bot. 68. 1797; Raeusch., Nom. Bot. 30. 1797; Pers., Syn. Pl. 1: 110. 1805; Steud., Nom. Bot. Phan., ed. 1, 313. 1821; Bong., Ess. Monog. Erioc. 2 & 8. 1831; Steud., Nom. Bot., ed. 2, 1: 585 & 586. 1840; Kunth, Enum. Pl. 3: 554, 556—558, 567, 612, & 614. 1841; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 271—272, 333, & 334. 1855; Körn., Linnaea 27: 581, 585, 638, 639, 641—645, 647, 648, & 652. 1856; Körn. in Mart., Fl. Bras. 3 (1): 280, 283, 285, 501, 503, & 505. 1863; Seshagiri Rao, Journ. Bombay Nat. Hist. Soc. 55: 437. 1958; Moldenke, Phytologia 2: 377 (1947) and 19: 410—411, 418, 420, 440, 449, 462, 477, & 488. 1970.

Kunth (1841), on page 614 of his index, lists an "*Eriocaulon quinquangulare e Nepalia* Wall." and cites it to page 558, where it does not seem to appear, but apparently he intends it as a synonym of *E. argenteum* Mart., which is now regarded as *E. quinquangulare* L.

Steudel (1840) regarded *E. striatum* Lam. and *E. trilobum* Hamilt. as synonyms of *E. quinquangulare* L., but the former is a valid species and the latter is now known as *E. sollyanum* Royle.

ERIOCAULON QUINQUANGULARE var. MARTIANUM Wall.

Additional bibliography: Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 558 & 613. 1841; Steud., Syn. Pl. Glum. 2: [Cyp.] 271 & 334. 1855; Körn. in Mart., Fl. Bras. 3 (1): 285. 1863; Moldenke, Phytologia 18: 432, 435, & 447. 1969.

ERIOCAULON RAVENELII Chapm.

Additional & emended bibliography: Moldenke, Phytologia 1: 322, 349, 354, 360, & 362 (1939), 2: 491 & 494 (1948), 3: 80 (1949), and 19: 411. 1970.

ERIOCAULON ROBUSTIUS (Maxim.) Mak.

Additional bibliography: Moldenke, Phytologia 2: 375—377 & 379 (1947), 2: 493 (1948), 3: 143 & 144 (1949), and 19: 412 & 478. 1970.

ERIOCAULON ROBUSTUM Steud.

Additional & emended bibliography: Steud., Syn. Pl. Glum. 2: [Cyp.] 271, 272, 333, & 334. 1855; Körn., Linnaea 27: 586, 658, & 674—676. 1856; Körn. in Mart., Fl. Bras. 3 (1): 508. 1863; Moldenke, Phytologia 19: 412. 1970.

ERIOCAULON ROSULATUM Körn.

Additional & emended bibliography: Körn., Linnaea 27: 600. 1856; Körn. in Mart., Fl. Bras. 3 (1): 298, 486—488, 500, & 507, pl. 61, fig. 3. 1863; Moldenke, Phytologia 19: 91. 1969.

ERIOCAULON ROUXIANUM Steud.

Additional & emended bibliography: Steud., Syn. Pl. Glum. 2: [Cyp.] 270—271 & 334. 1855; Körn., Linnaea 27: 580, 585, & 626—627. 1856; Körn. in Mart., Fl. Bras. 3 (1): 285. 1863; Moldenke, Phytologia 19: 91. 1969.

ERIOCAULON SCARIOSUM R. Br.

Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 313 (1821) and ed. 2, 1: 586. 1840; Kunth, Enum. Pl. 3: 568—571 & 614. 1841; D. Dietr., Syn. Pl. 5: 265. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 270, 273, & 334. 1855; Körn., Linnaea 27: 585 & 652—655. 1856; Körn. in Mart., Fl. Bras. 3 (1): 500 & 503. 1863; Moldenke, Phytologia 2: 493 & 494 (1948) and 19: 412—413. 1970; Moldenke, Biol. Abstr. 51: 459. 1970.

ERIOCAULON SCHIEDEANUM Körn.

Additional & emended bibliography: Körn., Linnaea 27: 600. 1856; Körn. in Mart., Fl. Bras. 3 (1): 492—493 & 508. 1863; Moldenke, Phytologia 1: 322—323, 350, 351, & 360 (1939) and 19: 413. 1970.

ERIOCAULON SCHIPPII Standl.

Additional & emended bibliography: Moldenke, Phytologia 1: 323, 350, & 361. 1939; Standl. & Steyerm., Fieldiana Bot. 24: 375—377. 1958; Moldenke, Phytologia 19: 413. 1970.

ERIOCAULON SELLOWIANUM Kunth

Emended synonymy: *Eriocaulon sellowianum* var. α Körn. in Mart., Fl. Bras. 3 (1): 485—486. 1863. *Eriocaulon sellowianum* var. β Körn. in Mart., Fl. Bras. 3 (1): 485—486. 1863.

Additional & emended bibliography: Kunth, Enum. Pl. 3: 545, 546, & 614. 1841; D. Dietr., Syn. Pl. 5: 263. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 269 & 334. 1855; Körn., Linnaea 27: 600. 1856; Körn. in Mart., Fl. Bras. 3 (1): 279, 280, 476, 483, 485—486, 493, 500, & 507, pl. 61, fig. 2. 1863; Moldenke, Phytologia 2: 375 (1947), 2: 494 (1948), and 19: 101—104. 1969.

ERIOCAULON SEPTANGULARE With.

Additional synonymy: *Eriocaulon septangulare* With. & Burm. ex Steud., Syn. Pl. Glum. 2: [Cyp.] 334. 1855. *Eriocaulon septangulare* L. ex Körn. in Mart., Fl. Bras. 3 (1): 294. 1863.

Additional & emended bibliography: Steud., Nom. Bot. Phan., ed. 1, 313 & 550. 1821; Bong., Ess. Monog. Erioc. 4, 8, 9, 13, 16, & 17. 1831; Steud., Nom. Bot., ed. 2, 1: 585 & 586. 1840; Kunth, Enum. Pl. 3: 540—541, 557, 568, 613, & 614. 1841; D. Dietr., Syn. Pl. 5: 263. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 268 & 334.

1855; Körn., Linnaea 27: 584, 588—590, 592, & 596. 1856; Körn. in Mart., Fl. Bras. 3 (1): 280 & 502—505. 1863; Robinson & Fern., Rhodora 11: 40. 1909; Moldenke, Phytologia 1: 323—327 & 348—364 (1939), 2: 373, 377, & 379 (1947), 2: 491 & 494 (1948), and 3: 80 & 142. 1949; Fassett, Man. Aquat. Pl., ed. 2, 169. 1969; Moldenke, Phytologia 19: 413—414 & 460. 1970.

ERIOCAULON SETACEUM L.

Additional & emended bibliography: Henckel, Nom. Bot. 68. 1797; Raeusch., Nom. Bot. 30. 1797; Pers., Syn. Pl. 1: 110. 1805; Steud., Nom. Bot. Phan., ed. 1, 313. 1821; Bong., Ess. Monog. Erioc. 2 & 13. 1831; Steud., Nom. Bot., ed. 2, 1: 586. 1840; Kunth, Enum. Pl. 3: 549, 550, & 614. 1841; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 270 & 334. 1855; Körn., Linnaea 27: 578, 584, & 601—604. 1856; Körn. in Mart., Fl. Bras. 3 (1): 476, 501, 505, & 508. 1863; Moldenke, Phytologia 19: 414. 1970.

ERIOCAULON SEXANGULARE L.

Additional synonymy: *Eriocaulon quadrangulare* L. ex Raeusch., Nom. Bot. 30, nom. nud. 1797. *Eriocaulon hexangulare* L. ex Raeusch., Nom. Bot. 30, nom. nud. 1797 [not *E. hexangulare* Kunth, 1893, nor Wall., 1937]. *Eriocaulon nitidum* Hort. ex Steud., Nom. Bot., ed. 2, 1: 585 & 586, in syn. 1840. *Eriocaulon wallichianus* Mart. & Wall. ex D. Dietr., Syn. Pl. 5: 265. 1852. *Eriocaulon quinquangulare* Lour. ex D. Dietr., Syn. Pl. 5: 265. 1852.

Additional & emended bibliography: Raeusch., Nom. Bot. 30. 1797; Henckel, Nom. Bot. 68. 1797; Pers., Syn. Pl. 1: 110. 1805; Steud., Nom. Bot. Phan., ed. 1, 313. 1821; Bong., Ess. Monog. Erioc. 2, 3, & 8. 1831; Steud., Nom. Bot., ed. 2, 1: 585 & 586 (1840) and 2: 37. 1841; Kunth, Enum. Pl. 3: 551—552, 557, 558, 563—567, 569, 613, & 614. 1841; D. Dietr., Syn. Pl. 5: 264 & 265. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 270—272, 333, & 334. 1855; Körn., Linnaea 27: 578, 579, 583, 584, 586, 613—618, & 687—691. 1856; Körn. in Mart., Fl. Bras. 3 (1): 280, 286, 288, 289, 293, 475, 501, 503, 505, & 508. 1863; Moldenke, Phytologia 2: 378 (1947), 2: 493 & 494 (1948), 3: 143 (1949), and 19: 414—415, 443, 450, 451, 475—478, 484, & 491. 1970.

It is very probable that the *E. quinquangulare* Lour. listed by Dietrich (1852) and described by him as "culmo 5-angulari; fol. ensiformibus; capitulo globoso basi truncato albicante. In Cochinchina. (!)" is merely a misprint for *E. quadrangulare* Lour. and therefore belongs in the synonymy of *E. sexangulare* L.

Steudel (1840, 1841) gives *E. tenue* Hamilt. and *Leucocephala spathacea* Roxb. as synonyms of *Eriocaulon sexangulare* L., but these two names belong in the synonymy of *E. cinereum* R. Br. instead; in his 1821 work he lists *E. striatum* Lam. as another synonym, but this is regarded by me as a distinct and valid species.

ERIOCAULON SOLLYANUM Royle

Emended synonymy: Eriocaulon trilobum Ham. ex Körn., Linnaea 27: 581, 585, 645—647, & 652. 1856.

Additional & emended bibliography: Körn., Linnaea 27: 581, 585, 645—647, & 652. 1856; Körn. in Mart., Fl. Bras. 3 (1): 283, 501, 505, & 506. 1863; K. U. Kramer, Excerpt. Bot. A.6: 33. 1963; Moldenke, Phytologia 19: 440, 452, & 478. 1970.

ERIOCAULON SONDERIANUM Körn.

Additional & emended bibliography: Körn., Linnaea 27: 586 & 669—671. 1856; Körn. in Mart., Fl. Bras. 3 (1): 300 & 503. 1863; N. E. Br. in Thiselt.-Dyer, Fl. Cap. 7: 53, 55, & 776. 1897; Moldenke, Phytologia 19: 423 & 457. 1970.

ERIOCAULON SPARGANIOIDES Bong.

Additional & emended bibliography: Körn., Linnaea 27: 601. 1856; Körn. in Mart., Fl. Bras. 3 (1): 499—500 & 508. 1863; Moldenke, Phytologia 19: 440. 1970.

ERIOCAULON SPRUCEANUM Körn.

Additional & emended bibliography: Körn. in Mart., Fl. Bras. 3 (1): 488--489 & 507. 1863; Moldenke, Biol. Abstr. 50: 12948. 1969; Moldenke, Phytologia 19: 440--442. 1970.

The Garcia-Barriga & Jaramillo Mejia 17128 collection cited below is a mixture with f. viviparum Moldenke.

Additional citations: COLOMBIA: Vaupés: Garcia-Barriga & Jaramillo Mejia 17128, in part (Ac).

ERIOCAULON SPRUCEANUM f. VIVIPARUM Moldenke

Additional bibliography: Moldenke, Biol. Abstr. 50: 12948. 1969; Moldenke, Phytologia 19: 441 & 442. 1970.

The Garcia-Barriga & Jaramillo Mejia 17128 collection cited by me in a previous installment of these notes is actually a mixture with typical E. spruceanum Körn.

ERIOCAULON STELLULATUM Körn.

Additional & emended bibliography: Körn., Linnaea 27: 579, 584, 620—621, & 692. 1856; Körn. in Mart., Fl. Bras. 3 (1): 284 & 475. 1863; Moldenke, Phytologia 19: 442—443 & 464. 1970.

ERIOCAULON STRIATUM Lam.

Additional & emended bibliography: Körn., Linnaea 27: 272, 585, & 650—652. 1856; Körn. in Mart., Fl. Bras. 3 (1): 286 & 505. 1863; Moldenke, Phytologia 19: 447—449. 1970.

ERIOCAULON TENUIFOLIUM Klotzsch

Additional synonymy: Eriocaulon tenuifolium Kunth ex Körn. in Mart., Fl. Bras. 3 (1): 489, sphalm. 1863.

Additional & emended bibliography: Körn., Linnaea 27: 600. 1856; Körn. in Mart., Fl. Bras. 3 (1): 489, 496, 498, & 507. 1863; Moldenke, Phytologia 2: 492 (1948) and 19: 454--456. 1970.

ERIOCAULON TEXENSE Körn.

Additional & emended bibliography: Körn., Linnaea 27: 584 & 594--596. 1856; Körn. in Mart., Fl. Bras. 3 (1): 476 & 503. 1863; Moldenke, Phytologia 1: 327, 350, 354, & 360 (1939), 2: 153 (1946), 2: 373 (1947), and 19: 459--461. 1970.

The Lonard 1956, distributed as E. texense, is actually E. decangulare f. parviceps Moldenke.

ERIOCAULON THUNBERGII Wikstr.

Additional & emended bibliography: Körn., Linnaea 27: 586 & 677--679. 1856; Körn. in Mart., Fl. Bras. 3 (1): 293. 1863; Moldenke, Phytologia 19: 462 & 486. 1970.

ERIOCAULON THWAITESII Körn.

Additional synonymy: Eriocaulon mariae Fyson, Kew Bull. Misc. Inf. 1914: 331. 1914.

Additional & emended bibliography: Körn., Linnaea 27: 580, 585, & 627--628. 1856; Körn. in Mart., Fl. Bras. 3 (1): 285. 1863; Moldenke, Phytologia 19: 443, 462--464, 476, 477, & 483. 1970.

ERIOCAULON TRANSVAALICUM N. E. Br.

Additional & emended bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Cap. 7: 53, 54, & 776. 1897; Moldenke, Phytologia 19: 458, 466, 467, & 469--471. 1970.

ERIOCAULON TRUNCATUM Hamilt.

Additional & emended bibliography: Körn., Linnaea 27: 581, 585, & 630--631. 1856; Körn. in Mart., Fl. Bras. 3 (1): 283--287, 298, 503, & 505. 1863; Moldenke, Phytologia 2: 376 (1947) and 2: 493 & 494. 1948; Brunig, Govt. Sarawak Sympos. Ecol. Res. Humid Trop. Veg. 307 & 311. 1965; Moldenke, Phytologia 19: 464, 473--480, & 482. 1970.

ERIOCAULON WIGHTIANUM Mart.

Additional bibliography: Körn., Linnaea 27: 585, 658--661, 663, & 669. 1856; Körn. in Mart., Fl. Bras. 3 (1): 503. 1863; Moldenke, Biol. Abstr. 50: 12948. 1969; Moldenke, Phytologia 19: 490--492. 1970.

ERIOCAULON WILLDENOVIANUM Moldenke

Additional & emended bibliography: Körn., Linnaea 27: 578, 583, 584, 586, 598, & 690--691. 1856; Körn. in Mart., Fl. Bras. 3 (1): 288, 474, 505, & 506. 1863; Moldenke, Phytologia 2: 379 (1947), 2: 494 (1948), and 19: 492--496. 1970.

At the very beginning of his description Kunth (1841) states "E. longifolium Nees ab Esenb. in Willd. herb. no. 2369. (excl. frustulo dextro?). Folia subpedalia, 2 lineas lata. Vaginae 4--4 1/2 -pollicares. Pedunculi 12--15-pollicares. Bracteae, flores feminei (masculi a me haud visi) et semina prorsus ut in planta Chapelieriana infra descripta, nisi sepala interiora pilos-

iora et semina perspicuis et densius hirtella, praesertim humectata." This apparently is a different collection from the 2359 which he cites later in the description. It would appear that no. 2369 was labeled E. longifolium and no. 2359 was labeled E. sexangulare in the Willdenow herbarium. The Chapelier specimen seen by me in the Berlin herbarium and cited below, does not match well the majority of specimens ascribed to E. willdenovianum, since its leaves are short but narrow. Its label is inscribed "E. scariosum Br." and its flowers are described as "tetrandrous".

The type of E. sexangulare Willd. is "Willd. herb. no. 2359. fol. 1. (excl. frustulo dextro, quod certissime E. quinquangulare.)" according to Kunth (1841). The E. sexangulare of Linnaeus is, of course, a valid species, but the homonyms referred to in the synonymy of E. willdenovianum and attributed to "Auct." and to Martius are synonyms of E. cinereum R. Br., that credited to Burman is E. minimum Lam., and that credited to Heyne is E. infirmum Steud.

The Hooker (1893) reference in the bibliography of this species is often dated "1894", but actually pages 449—672 of this work appeared in 1893. Merrill (1921) cites the Hallier reference to volume "24" in error. The Erlandsson reference (1942) is sometimes cited as "1940", but the pages involved here actually were not issued until February 25, 1942. Erlandsson also unites what he calls E. longifolium Nees with E. sexangulare L.

Maximowicz (1893) says "E. longifolium Nees herb. in Kunth, Enum. III, 567. Koernicke in Linnaea, XXVII, 690, quod prostat e Hongkong (Fortune! n. 120), Malacca (Cuming!) et Ceylon!, ab E. Wallichiano distinctum dicitur floribus dimeris et bracteis acutiusculis nec breve acuminatis, sed in specimine Fortuneano horti bot. Petrop. video, cum Benthamio, flores trimeros dimeris vix rariores, bracteae autem mihi eaedem visae sunt."

Hochreutiner (1908) cites Guillot 20 from Madagascar, but this collection proves to be E. sexangulare L. and is so cited by me in this present series of notes. Hallier (1916) cites Cuming 2328 from the Philippine Islands, but this collection has also proved to be E. sexangulare. Merrill (1921) cites Hallier 1172, Korthals s.n., Schlechter 13209, and Teijsmann 11556 from Borneo and Clemens 9635 from Sabah. Van Royen (1959, 1965) cites Van Royen 4094, 4501, 4838, & 4909 from New Guinea.

Material of E. willdenovianum has been misidentified and distributed in herbaria as E. australe R. Br. On the other hand, the Afzelius s.n. [Tamatave, 26.7.1912], Cuming 2328, Fortune s.n. [Hongkong], Hosokawa 8820, Metcalf & Ging 5073, Schlieben 10780, L. Y. Tai 11618, and Yates 2486, all distributed as E. longifolium, are actually E. sexangulare L.; H. Hallier 1172 is a mixture of E. sexangulare L. and E. truncatum Hamilt.; and Mjoberg 211 is E.

willdenovianum f. viviparum Moldenke.

Citations: MADAGASCAR: Alleizette s.n. (P); Chapelier s.n. (B); Decary 4780 (P), 5306 (P), 6457 (P), s.n. (P); Geay 7918 (P), 8163 (P); Humblot 348 (B, P); Petit-Thouars 2 (P); F. V. Thompson 150 (Br). CEYLON: Alston 1069 (Ca—360966, K); J. Fraser 55 (W—45306); G. W. Walker s.n. [Herb. Hook.] (Ut—416). THAILAND: Smitinand & Abbe 6158 [Herb. Roy. Forest Dept. 24384] (Z); Sørensen, Larsen, & Hansen 723 (S). MALAYA: Johore: Franck 389 (Cp). Malacca: Gaudichaud 100 (B); W. Griffith s.n. (B). Pahang: M. R. Henderson 24038 (N). Singapore: Kuntze 6063 (N); Schottmüller 116 (B). State undetermined: Burmann s.n. (V, V, V). INDONESIA: GREATER SUNDA ISLANDS: Balambangan: D. D. Wood 1725 (Ca—241564). Banka: Teijsmann 3464 H.B. (Ut—321). Celebes: Kjellberg 3797 (S, S). Sabah: Burbidge s.n. (D—824285). Sarawak: Clemens & Clemens 20822 [field no. 7450] (N). Sumatra: Rainer-Kesselitz s. n. [Feb. '85] (V—4653); Toroes 4285 (W—1680946). MELANESIA: NEW GUINEA: Dutch New Guinea: Van Royen 4501 (N). Papua: Brass 5751 (Ca—1157997, N), 5752 (Ca—1157996, N, W—1943115), 7603 (N), 7936 (N), 7951 (N), 8576 (N), 8638 (N). Sudest Island: Brass 28178 (W—2409103). LOCALITY OF COLLECTION UNDETERMINED: Herb. Hooker s.n. (K).

ERIOCAULON WILLDENOVIANUM f. VIVIPARUM (Moldenke) Moldenke

Synonymy: Eriocaulon longifolium f. viviparum Moldenke, Phytologia 7: 86. 1959.

Bibliography: Moldenke, Phytologia 7: 86. 1959; Moldenke, Résumé Suppl. 1: 13 & 25. 1959; Moldenke, Biol. Abstr. 35: 1688. 1960; Hocking, Excerpt. Bot. A.4: 592. 1962; Moldenke, Résumé Suppl. 17: 6. 1968.

Recent collectors describe this plant as an herb to 10 inches tall, growing on rocks below waterfalls, flowering and fruiting in February.

Citations: INDONESIA: GREATER SUNDA ISLANDS: Borneo: Mondi 278 (Ut—34211a—type). Sarawak: Mjoberg 211 (Ca—234172, N); Native collector 474 (W—1290539); Purseglove P.5568 (N).

ERIOCAULON WILLIAMSII Moldenke

Bibliography: Moldenke, N. Am. Fl. 19 (1): 20 & 36. 1937; Moldenke, Phytologia 1: 327—328, 350, 359, & 363. 1939; Moldenke, Carnegie Inst. Wash. Publ. 522: 141—142. 1940; Moldenke in Woodson & Schery, Ann. Mo. Bot. Gard. 31: 68. 1944; Moldenke, Alph. List Cit. 1: 326. 1946; Moldenke, Known Geogr. Distrib. Erioc. 4 & 42. 1946; Hill & Salisb., Ind. Kew. Suppl. 10: 86. 1947; Moldenke, Alph. List Cit. 3: 736 (1949) and 4: 1133. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 36, 41, & 206. 1949; Standl. & Steyerm., Fieldiana Bot. 24: 375 & 377. 1958; Moldenke, Résumé 43, 48, & 484. 1959.

Emended citations: BRITISH HONDURAS: W. C. Meyer 134 (F—635926).

ERIOCAULON WOODII N. E. Br.

Synonymy: Eriocaulon natalense Schinz, Mém. Herb. Boiss. 10: 76. 1900. Eriocaulon latifolium Nees apud Schinz, Mém. Herb. Boiss. 10: 76, in syn. 1900 [not E. latifolium Arech., 1902, nor Bong., 1831, nor J. Sm., 1809].

Bibliography: N. E. Br. in Thiselt.-Dyer, Fl. Cap. 7: 53, 57, & 776. 1897; Ruhl. in Engl., Bot. Jahrb. 27: 70 & 77. 1899; Schinz, Mém. Herb. Boiss. 10: 76. 1900; Ruhl. in Engl., Pflanzenreich 13 (4-30): 61, 70, 71, 286, & 288, fig. 8. 1903; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 70. 1904; Engl. & Drude, Veget. Erde 9 (2): 263. 1908; Marlot, Fl. S. Afr. 4: 66. 1915; Stapf, Ind. Lond. 3: 91. 1930; Moldenke, Known Geogr. Distrib. Erioc. 22, 37, & 42. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 122, 206, & 207. 1949; H. Hess, Bericht. Schweiz. Bot. Gesell. 65: 150, 151, & 267, pl. 8, fig. 5. 1955; Moldenke, Résumé 153, 290, & 484. 1959; Moldenke, Résumé Suppl. 14: 3. 1966; Moldenke, Phytologia 19: 324, 342, 445, 446, & 466. 1970.

Illustrations: Ruhl. in Engl., Pflanzenreich 13 (4-30): 71, fig. 8. 1903; Engl. & Drude, Veget. Erde 9 (2): 263. 1908; Marlot, Fl. S. Afr. 4: 66. 1915; H. Hess, Bericht. Schweiz. Bot. Gesell. 65: pl. 8, fig. 5. 1955.

The type of this species is J. M. Wood 3053, collected in a swamp near Murchison, Natal, South Africa. Brown (1897) notes that "This appears to be an aquatic species. In the Kew specimens, the flower heads of which are somewhat malformed, the receptacle is flat and appears to be glabrous. The flowers may not have attained their normal development, but the remarkably flaccid, denticulate sepals well distinguish this from all other South African species."

The E. latifolium of Smith, referred to in the synonymy above, is a valid species, but the homonym accredited to Arechavaleta is a synonym of E. arechavaletae Moldenke, while that of Bongard belongs in the synonymy of Paepalanthus serralapensis Moldenke.

Hess (1955) suggests that E. woodii may be conspecific with E. stoloniferum Welw.; if so, then the Welwitsch epithet would have to be displaced by the older E. woodii.

Citations: MOUNTED ILLUSTRATIONS: Engl., Pflanzenreich 13 (4-30): 71, fig. 8 (B).

ERIOCAULON WOODII var. MINOR Ruhl.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 70 & 288. 1903; Moldenke, Known Geogr. Distrib. Erioc. 22 & 42. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 122 & 207. 1949; Moldenke, Phytologia 3: 470. 1951; H. Hess, Bericht. Schweiz. Bot. Gesell. 65: 151. 1955; Moldenke, Résumé 153 & 484. 1959; Moldenke, Résumé Suppl. 14: 3. 1966; Moldenke, Phytologia 19: 446. 1970.

Wild describes this variety as stoloniferous, growing both on wet riverbanks and in the water itself. It has been found at altitudes of 500—1665 meters, flowering and fruiting in October. *Rudatis 1420* in the Munich herbarium is inscribed "*Eriocaulon woodii* N. E. Br., nov. sp.", but this collection is not the type collection of *E. woodii* as designated by Brown. The type of *E. woodii* var. *minor* is *J. M. Wood 524*, deposited in the Berlin herbarium.

The comment by Wild, mentioned above, is of particular interest in view of the suggestion by Hess (1955) that *E. woodii* N. E. Br. and *E. stoloniferum* Welw. may be conspecific.

Additional citations: RHODESIA: *Wild 5521* (Mi). SOUTH AFRICA: Natal: *Rudatis 1420* (Mu—411, S, S); *J. M. Wood 524* (B—type, Z—isotype).

ERIOCAULON WOODSONIANUM Moldenke

Bibliography: Moldenke in Woodson & Schery, Ann. Mo. Bot. Gard. 27: 268—269. 1940; Moldenke, Ann. Mo. Bot. Gard. 31: 67. 1944; Moldenke, Known Geogr. Distrib. Erioc. 4 & 42. 1946; Moldenke, Alph. List Cit. 1: 163. 1946; Hill & Salisb., Ind. Kew. Suppl. 10: 86. 1947; Moldenke, Alph. List Cit. 2: 429. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 41 & 207. 1949; Moldenke, Phytologia 3: 470. 1951; Moldenke, Résumé 48 & 484. 1959.

Recent collectors describe this species as an herb with white flower-heads, growing in moist areas with standing water and mud, flowering in February.

Additional citations: PANAMA: Herrera: *Stern, Eyde, & Ayensu 1701* (Mi, W—2490216).

ERIOCAULON XENOPODION Koyama

Synonymy: *Eriocaulon xenopodium* Koyama ex Moldenke, Résumé Suppl. 15: 20, in syn. 1967.

Bibliography: Koyama, Philip. Journ. Sci. 84: 374—375 & 377, pl. 4. 1956; Moldenke, Résumé 178 & 484. 1959; G. Taylor, Ind. Kew. Suppl. 13: 52. 1966; Moldenke, Résumé Suppl. 15: 20. 1967.

Illustrations: Koyama, Philip. Journ. Sci. 84: pl. 4. 1956.

The type of this distinctive bulbous species was collected by Bunzô Hayata at Nayak, Thailand, on December 16, 1921. Koyama (1956) notes that "This strange taxon is outwardly allied to *E. ubonense* by its heads. Seeing herbaria, I at first thought that the above sheets were mixture of some heads of *Eriocaulon* and vegetative parts of *Xyris*, so large and distinct tuber this species has." Larsen and his associates collected the species in sphagnum bogs at 1350 meters altitude. It has been collected in flower and fruit in July and December.

Citations: THAILAND: *Hayata s.n.* [Doi Step, 22/XII/1922] (Z); *Larsen, Smitinand, & Warncke 2* (Ac, Rf).

ERIOCAULON XERANTHEMUM Mart.

Synonymy: *Eriocaulon pygmaeum* Dalz. in Hook., Kew Journ. 3:

281—282. 1851 [not *E. pygmaeum* Körn., 1863, nor Mart., 1841, nor Soland., 1809]. *Eriocaulon xeranthemum* Mart. & Wall. ex D. Dietr., Syn. Pl. 5: 264. 1852.

Bibliography: Mart. in Wall., Pl. Asiat. Rar. 3: 29. 1832; Wall., Numer. List 208 ["207"]. 1832; Royle, Illustr. Bot. Himal. 409. 1840; Steud., Nom. Bot., ed. 2, 1: 586. 1840; Kunth, Enum. Pl. 3: 555 & 614. 1841; Dalz. in Hook., Kew Journ. 3: 281—282. 1851; D. Dietr., Syn. Pl. 5: 264. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 270 & 334. 1855; Körn., Linnaea 27: 580, 585, & 624—626. 1856; C. Müll. in Walp., Ann. 5: 926 & 935—936 (1860) and 6: 1171. 1861; Dalz. & Gibs., Bomb. Fl. 280. 1861; Körn. in Mart., Fl. Bras. 3 (1): 283 & 503. 1863; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 24. 1888; Hook. f., Fl. Brit. Ind. 6: 584—585. 1893; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 879 & 880. 1893; Prain, Bengal Pl., ed. 1, 1127. 1903; Ruhl. in Engl., Pflanzenreich 13 (4-30): 65, 96, 287, & 288. 1903; E. D. Merr., Bibl. Enum. Born. Pl. 111. 1921; Fyson, Journ. Indian Bot. 2: 200, 201, & 317. 1921; Haines, Bot. Bihar & Orissa 6: 1067 & 1070. 1924; C. E. C. Fischer in Gamble, Fl. Presid. Madras, ed. 1, 9: 1614 & 1620. 1931; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 879 & 880. 1946; Moldenke, Known Geogr. Distrib. Erioc. 23, 24, 26, 27, 39, & 42. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 125, 127, 129, 139, 145, & 207. 1949; Moldenke, Phytologia 3: 470. 1951; C. E. C. Fischer in Gamble, Fl. Presid. Madras, ed. 2, 8 [3]: 1124, 1127--1128, & 1333. 1956; Moldenke, Résumé 159, 160, 163, 165, 180, 192, 291, & 484. 1959; Moldenke, Résumé Suppl. 1: 11. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 879 & 880. 1960; Prain, Bengal Pl., ed. 2, 2: 849. 1963; Subramanyam & Henry, Bull. Bot. Surv. India 8: 214. 1966; Sebastine & Ramamurthy, Bull. Bot. Surv. India 8: 176. 1966; Moldenke, Résumé Suppl. 15: 8 (1967) and 16: 9. 1968; Moldenke, Phytologia 18: 122, 250, 310, & 428 (1969), 19: 36 (1969), and 19: 348, 468, 476, & 477. 1970.

Illustrations: Fyson, Journ. Indian Bot. 2: 201. 1921.

Eriocaulon xeranthemum is based on *W. Gomez* *5* & *6*, which were distributed as *Wallich* *6081a* & *6081c*, from Nepal and from Tavoy [the latter locality being in Tenasserim, Burma], respectively, although Martius' original description (1832) says "Crescit in Napalia (N. Wallich 1821); in Tavoy (W. Gomez)" — the "1821" appears to be the year when the collection was made, rather than a number. The *W. Gomez* *6* sheet in the herbarium of the Jardin Botanique de l'Etat at Brussels has a letter attached from Wallich to Martius, dated January 17, 1832. Wallich (1832) actually cites three collections under this name: "*6081a* Napalia 1821; *6081b* Silhet hD; *6081c* Tavoy W. Gom."

The *E. pygmaeum* of Solander, referred to in the synonymy above, is a valid species, but the homonym attributed to Körnicke is a synonym of *E. koernickei* Britten, while that attributed to Martius is in the synonymy of *Paepalanthus* *bifidus* (Schrad.) Kunth.

It should be noted that Hooker (1893) places *E. xeranthemoides* Van Heurck & Muell.-Arg. in the synonymy of *E. xeranthemum* Mart., but this name belongs more properly in the synonymy of *E. togoënse* Moldenke, an African plant.

The description and discussion of *E. xeranthemum* by Fyson (1921) are worth quoting here: "Leaves 2/3 — 1/2 in. Scapes slightly longer or shorter. Disc of head 1/10 — 1/8 in. Involucral bracts much longer, glistening white. Receptacle globose, floral bracts broadly obovate truncate, hairy at the tip. Female sepals narrow 3 equal or unequal or 2 only.....Central Himalayas, Nepal; Assam, Khasia, Peninsular India, Malabar, Cochin, etc. Hooker in F. B. I. describes the receptacle as hairy, but wrongly. Martius.....says the hairiness is the only real reason for distinguishing *E. xeranthemoides* from this species. Hooker also gives the sepals as 2. Koernicke......gives them as 3, but unequal. I find both the petals and sepals of the female flowers very in size among themselves and one sepal may be linear or absent."

The species has been found growing in swampy ground among grasses, at altitudes of 50 to 4000 feet, flowering and fruiting in July and September. Prain (1903) records it from Chota Nagpur and refers to it as "An annual, terrestrial, tufted herb". Sebastine & Ramamurthy (1966) report it as "abundant" in Kerala and cite their no. *14361*, while Subramanyam & Henry (1966) cite their no. *8658* from Madhya Pradesh. Merrill (1921) cites *Gibbs 3077* from Sabah. The initial letter of the specific epithet of both scientific binomials involved is often uppercased by some authors, but without any valid reason.

Material of this taxon has been misidentified and distributed in herbaria as *E. minutum* Hook. f. On the other hand, the *Stocks, Law, &c. s.n.* [Malabar, Concan &c.], distributed as *E. xeranthemum*, is actually *E. heterolepis* Steud., while *Herb. Bot. Surv. India s.n.* [27.9.56] is *E. truncatum* Hamilt.

Additional citations: NEPAL: *W. Gomez 5* (Br—cotype); *Wallich 6081* (Mu--265--cotype), *6081a* (M—cotype). INDIA: Bombay: *Santapau 2928* (N, Xa); *Stocks, Law, &c. 15* (B). Khasi States: *Hooker & Thomson s.n.* [Mont. Khasia. 4000 ped.] (Br, M, Mu—264, S, Ut--93611b). Mysore: *S. N. Ramaswamy 12* (Z). BURMA: Tenasserim: *W. Gomez 6* (Br—cotype, N--photo of cotype, Z--photo of cotype); *Rhind 231* (N); *Wallich 6081c* (B—cotype).

ERIOCAULON YAOSHANENSE Ruhl.

Bibliography: Ruhl., Notizbl. Bot. Gart. Berlin 10: 1043—1044. 1930; A. W. Hill, Ind. Kew. Suppl. 8: 87. 1933; Moldenke, Known Geogr. Distrib. Erioc. 25 & 42. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 132 & 207. 1949; Moldenke, Résumé 170 & 484. 1959.

ERIOCAULON YOSHINOI Nakai

Bibliography: Nakai, Bull. Géogr. Bot. 21: 139. 1911; Prain, Ind. Kew. Suppl. 5, pr. 1, 97. 1921; Nakai & Honda, Nov. Pl. Jap. 6: 12 & 87. 1940; Moldenke, Known Geogr. Distrib. Erioc. 26. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 134 & 207. 1949; Moldenke, Résumé 173 & 484. 1959; Prain, Ind. Kew. Suppl. 5, pr. 2, 97. 1960.

ERIOCAULON YUNNANENSE Moldenke

Bibliography: Moldenke, Phytologia 2: 221, 376, & 379. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 132 & 207. 1949; Moldenke, Phytologia 3: 470—471. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 88. 1953; Moldenke, Résumé 170 & 484. 1959; E. H. Walker, Bibl. East. Asiat. Bot. Suppl. 1: 235. 1960.

ERIOCAULON ZAMBESIENSE Ruhl.

Synonymy: *Eriocaulon zambesiana* Ruhl. ex Moldenke, Résumé Suppl. 3: 32, in syn. 1962.

Bibliography: Ruhl. in Engl., Bot. Jahrb. 27: 70 & 75—76. 1899; Ruhl. in Engl., Pflanzenreich 13 (4-30): 61, 73, & 288. 1903; H. Lecomte, Bull. Soc. Bot. France 55: 571, & 572 (1908) and 55: 648. 1909; Moldenke, Known Geogr. Distrib. Erioc. 21, 22, & 42. 1946; J. Hutchinson, Botanist South. Afr. 499. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 113, 119, 120, & 207. 1949; Moldenke, Résumé 138, 149, & 484. 1959; Moldenke, Résumé Suppl. 3: 16 & 32. 1962; Moldenke, Phytologia 18: 259. 1969.

Hutchinson (1946) cites his no. *3648*. The *Herb. Inst. Fr. Afr. Noire 10358*, distributed as *E. zambesiense*, is actually the type collection of *E. latifolium* f. *proliferum* Moldenke, while *Bojer 79* is *E. sollyanum* Royle.

Citations: TANZANIA: Tanganyika: *Stolz 2326* (S). MALAWI: *Whyte s.n.* [Mt. Zomba] (B—cotype, Z—cotype).

ERIOCAULON ZOLLINGERIANUM Körn.

Synonymy: *Eriocaulon alatum* H. Lecomte, Journ. de Bot. 21: 104. 1908.

Bibliography: Körn., Linnaea 27: 583, 586, & 682—683. 1856; C. Müll. in Walp., Ann. 5: 926 & 945 (1860) and 6: 1171. 1861; Körn. in Mart., Fl. Bras. 3 (1): 289. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 880. 1893; Ruhl. in Engl., Pflanzenreich 13 (4-30): 66, 99, & 288. 1903; H. Lecomte, Journ. de Bot. 21: 104, 105, & 132, fig. 1 & 2. 1908; E. D. Merr., Philip. Journ. Sci. 7: 232. 1912; E. D. Merr., Fl. Manila 136. 1912; H. Lecomte, Fl. Gén. Indo-chin. 7: 18, fig. 2. 1912; E. D. Merr., Enum. Philip. Flow. Pl. 1: 192. 1912; Prain, Ind. Kew. Suppl. 4, pr. 1, 82. 1913; Fyson, Journ. Indian Bot. 2: 320. 1921; Prain, Ind. Kew. Suppl. 4, pr. 2, 82. 1938; Moldenke, Known Geogr. Distrib. Erioc. 26, 27, 42, & 61. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 880. 1946; Moldenke, Phytologia 2: 377.

1947; Moldenke, Alph. List Cit. 2: 462 (1948) and 3: 840. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 144 & 207. 1949; Moldenke, Phytologia 3: 181 (1949) and 4: 339. 1953; Van Royen, Nov. Guin., new ser., 10: 22, 36, 38, & 43—44, fig. 4 T. 1959; Moldenke, Résumé 175, 184, 190, 201, 479, & 484. 1959; Moldenke, Résumé Suppl. 1: 13. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 880. 1960; Moldenke, Résumé Suppl. 3: 20, 23, & 24. 1962; Van Royen, Nov. Guin. Bot. 14: 467. 1965; Thanikaimoni, Pollen & Spores 7: 183. 1965; Backer & Bakh., Fl. Java 3: 25—26. 1968; Moldenke, Phytologia 17: 385 (1968), 19: 13—14, 43, 65, 86, & 91 (1969), and 19: 329. 1970.

Illustrations: H. Lecomte, Journ. de Bot. 21: 105 & 132, fig. 1 & 2. 1908; H. Lecomte, Fl. Gén. Indo-chin. 7: 18, fig. 2. 1912; Van Royen, Nov. Guin., new ser., 10: 36, fig. 4 T. 1959.

Backer & Bakhuizen van den Brink (1968) give a partial description of this species: "Interfloral bracts acuminate or cuspidate, cuneate-obovate; receptacle more or less pubescent; basal bract of peduncles firmly appressed, with an obtuse, entire mouth; heads ovoid-globose, 4—5.5 mm. by 2.5—4 mm; involucral bracts ovate, obtuse; ♂: sepals 3; connate into a unilaterally split sheath, entirely pale; petals 3, unequal, ciliate, below the top with a gland; ♀: sepals 3, two of them navicular with a keeled-winged back, the 3rd rudimentary, linear, caducous; petals 3, rather obtuse, glandless. Leaves linear, obtusely acuminate, 6—8 cm by 2—3 1/4 mm. 0.12—0.30. Long ago collected near Tijikoya (W) on the mud of a wood-brook, afterwards never found again."

Lecomte (1908) says of it "Se rapproche de *E. sexangulare* L., mais n'a que deux sepales au lieu de trois à la fleur femelle" and cites *Thorel s.n.* from Bassac, in Indochina, as the type of *E. alatum*. He also notes "Nous l'avons aussi recontrée dans l'herbier de Pierre, comme venant de la Cochinchine du Sud".

Van Royen (1959) was the first botanist to unite *E. alatum* with the older *E. zollingerianum* and his composite description is therefore of particular importance: "Herb up to 30 cm. Leaves linear-ensiform, 2—8 by 0.2—0.4 cm, acuminate, 7—11-nerved, fenestrate, glabrous. Peduncles up to 30 cm long, 5-ribbed, twisted, glabrous, sheath 2.5—5 cm long, glabrous. Heads ovoid-oblong or ovoid-globose, 2.5—6 by 4—5.5 mm, involucral bracts obovate or oblong, c. 1.5 by 1 mm, rounded, glabrous, the inner bracts subacute, floral bracts broadly ovate or obovate-cuneate, c. 1.6 by 1.5 mm, indistinctly acuminate-cuspidate, glabrous; receptaculum with long white hairs. ♂ Flowers: sepals 3, tubuliformly united, but the two lateral ones united only up to a half, c. 1.7 mm long, rounded, irregularly serrate, glabrous or with a few hairs on the crest of the lateral sepals; petals 3, tubuliformly united, c. 1.2 mm long, the free lobes unequal, obtuse, fimbriate or entire at apex; stamens 6, unequal, anthers black. ♀ Flowers: sepals 3, lateral ones boatshaped, c. 1.2 by 1 mm, acute, broadly crested, crest at apex irregularly serrate, the abaxial wing broader than the adaxial wing, with long white hairs at inside, median sepal linear, 0.7 mm long, obtuse, glabrous, often soon caducous; petals 3, free, oblanceolate, c. 1.2 by 0.2 mm, acute, slightly fimbriate near apex; ovary 3-celled; style 1 with 3 branches. Seeds ellipsoid, c. 0.2 mm long, pale yellow, hairy. Distribution. Indo China, Java, Luzon, Celebes, New Guinea." He cites Van Royen 3601 & 3970 in the Leiden herbarium, N.G.F. 6172 & Womersley 3658 at Lae, and Brass 7844 in the herbarium of Arnold Arboretum and at Leiden, all from New Guinea. He dates Körnicke's work as "1854", but 1856 was the actual date of its appearance.

Fyson (1921) says "E. alatum (in Herb. Calc. Coll. Col. Pirie Cochin China;) with glistening ovoid heads and female sepals as in E. cuspidatum Dalz. There are also in Herb. Calc. two other sheets one Coll. Loher. No. 1602 in Philippines is very similar to the E. alatum (above) but the wings of the female sepals are coarsely toothed. The other has a label 'ex herb. hort. Kew' and a number 1168, but no other identification mark. Two of the female sepals are crested, one not deeply boat-shaped and not crested."

Recent collectors have encountered this plant on high plateaus from 200 to 400 meters in altitude, flowering and fruiting in January, April, August to October, and December, and record the vernacular name "chuk nok yung". Brass describes the heads as brown and says the plant is common on wet grass plains in New Guinea; Schmid found it in "terrain sableux en bordure d'une rivière". I have personally found the glistening stramineous ovoid flowering heads of this species most characteristic and helpfully distinctive.

Material has been misidentified and distributed in herbaria as E. merrillii Ruhl. and E. truncatum Hamilt. On the other hand, the Loher 1602, cited below, is a mixture with something in the Cyperaceae and Loher 6987 is a mixture with E. cinereum R. Br.

Citations: THAILAND: Bunnal 571b [Roy. Forest Dept. 18264] (Bk); Larsen 8425 (Z); Sørensen, Larsen, & Hansen 784 (Cp), 8070 (S). INDOCHINA: Annam: Schmid 79a (N). Cochinchina: Pierre s.n. [Cochinchina] (N). WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Luzon: Loher 1602, in part (Mu—379, W—389001); M. Ramos s.n. [Herb. Philip. Bur. Sci. 1831] (N, W—626710); Reillo s.n. [Herb. Philip. Bur. Sci. 19270] (N). Island undetermined: Loher 6987, in part (Mu—406, W—713809). INDONESIA: GREATER SUNDA ISLANDS: Celebes: Eyma 3383 (Ut—11518b), 3996 (Ut—11514b). Java: Zollinger 333 (B—type, Z—isotype). Sumatra: H. H. Bartlett 7456 (Mi, W—1552242). MELANESIA: NEW GUINEA: Papua: Brass 7821 (N), 7884 (N).

ERIOCAULON ZYOTANII Satake

Bibliography: Satake, Bot. Mag. Tokyo 51: 287—288 [Shib. Comm. Art. 17: 105—106], fig. 2. 1937; Honda, Nom. Pl. Jap. 463.

1939; Satake in Nakai & Honda, Nov. Fl. Jap. 6: 6, 12, 25, 78, & 87, fig. 1 H & 9. 1940; Satake, Bull. Tokyo Sci. Mus. 4: [Rev. Jap. Erioc.] 16--17, pl. 11, fig. 3. 1940; Hill & Salisb., Ind. Kew. Suppl. 10: 86. 1947; Moldenke, Phytologia 2: 493 & 495. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 134 & 207. 1949; Moldenke, Résumé 173 & 484. 1959; Moldenke, Résumé Suppl. 3: 18 & 19. 1962; Koyama in Kitamura, Murata, & Koyama, Col. Illustr. Herb. Pl. Japan 3: 178 & 430. 1964.

Illustrations: Satake, Bot. Mag. Tokyo 51: [Shib. Comm. Art. 17: 105] 287, fig. 2. 1937; Satake in Nakai & Honda, Nov. Fl. Jap. 6: 6 & 25, fig. 1 H & 9. 1940; Satake, Bull. Tokyo Sci. Mus. 4: [Rev. Jap. Erioc.] pl. 11, fig. 3. 1940.

Satake (1937) records the vernacular name "izunosima-hosikusa" for this plant. The species is based on Y. Zyôtani s.n., collected on the island of Kôzusima, province of Izu, Honshu, Japan, in July, 1936, and deposited in the herbarium of Tokyo University. Thus far the species appears to be known only from the original collection and is presumed to be endemic at the type locality.

LACHNOCAULON Kunth

Synonymy: Sacnocaulon Cuthbert ex Moldenke, Phytologia 3: 471, in syn. 1951.

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This small genus of 11 species and varieties is entirely North American, if Cuba is regarded as an integral part of that continent. The type species is *Eriocaulon villosum* Michx. [=*Lachnocaulon anceps* (Walt.) Morong]. The generic name is derived from the Greek, λαχνος and καυλος, meaning "woolly stem", in allusion to the white-woolly peduncles of the type species in its typical form. Vernacular names for members of the genus are "bog-buttons" and "hairy-pipeworts".

Radford, Ahles, & Bell (1964) key the Carolinian species apart as follows:

1. Mature seeds smooth............................*L. beyrichianum*.
1a. Mature seeds cancellate or striate.
  2. Heads 4 mm. or less broad; seeds 0.5 mm. long.....*L. minus*.
  2a. Heads 5 mm. or more broad; seeds 0.8 mm. long.....*L. anceps*.

Kral (1966) recognizes only 5 species from continental North America and separates them as follows:

1. Trichomes of the apices of the receptacular bractlets and perianth parts congested with a milk-white substance, this imparting a pale gray or whitish color to the heads; plants very often long-lived, forming large convex mats of hairy-leaved rosettes, each rosette terminating an elongate-ascending, scaly stem; scapes hairy.
  2. Leaves narrowly linear; mature heads seldom broader than 4 mm.; seeds dark reddish-brown, very lustrous, the longitudinal ribs obscure.........................*L. beyrichianum*.
  2a. Leaves linear; mature heads seldom as narrow as 4 mm. and usually paler than the above; seeds not as lustrous, the longitudinal ribs evident.........................*L. anceps*.
1a. Trichomes of the apices of the receptacular bractlets and perianth parts not congested with a milk-white substance, thus translucent so that the brown bractlets and/or perianth parts impart their own color to the heads; the plants either relatively short-lived and short-stemmed or, if long-stemmed, with diminutive *Polytrichum*-like leaves.
  3. Scapes with ascending hairs; heads a dull gray-brown, the hairs of the receptacle and of the flowers so copious as to at least partly obscure the florets (old heads may lose some of the hairs)................................*L. minus*.
  3a. Scapes smooth; heads either chocolate-brown or dull-brown, but, if dull-brown, with female sepals yellowish-white and

hardly obscured by the receptacular hairs and with the gynoecium 2-carpellary.

4. Heads dark chocolate-brown or reddish-brown, usually oblong by seeding time; gynoecium 3-carpellary; leaves seldom shorter than 2 cm.; the sheaths of the scapes shorter than to about the length of the leaves.......... *L. engleri*.

4a. Heads pale-brown, usually globose by seeding time; gynoecium 2-carpellary; leaves seldom as long as 2 cm.; the sheaths of the scapes longer than the leaves or at least rising above them....................*L. digynum*.

His discussion of the genus as a whole is extremely interesting and well worth repeating here for the benefit of workers without access to the journal in which it was published: "Dr. Moldenke (1937) treats 8 species for the United States. However, species such as *L. floridanum* Small, *L. glabrum* Korn., and *L. eciliatum* Small are based on such intrapopulation variables as sepal length (accrescense is here suspected), peduncular trichomes, and amount of pubescence on bracts and sepals. Therefore, in this work, such entities are treated as extremes of either *L. anceps* or *L. minus* which appear to be the two nuclei for all these variants.

"In the United States *Lachnocaulon* may be distinguished readily from either *Eriocaulon* or *Syngonanthus* by its fine, evidently branched root system in contrast to the relatively unbranched-septate systems of *Eriocaulon* and the unbranched and fleshy systems of *Syngonanthus*. Lachnocaulons of the United States may be divided into two groups on the basis of habitat. One, comprised of *L. engleri* and *L. minus*, is usually found in such ephemeral habitats as fluctuating lake and pondshores, roadbank seepage, borrow pits, ditches, spoilage, and geologically recent sandy sloughs, particularly along the seacoast. Thus such species tend to be aspect dominant one summer in a given locale, seemingly absent the next. It would appear in such case that their seeds must have to remain viable over extended periods of time, for some of the ephemeral Florida lakes about which they often abound are periodically bone dry. The other group, comprised of *L. anceps*, *L. beyrichianum*, and *L. digynum*, appears in more stable situations inland within the coastal plain province as well as along the coast and on disturbed situations. They usually are on what appears to be much more acid substrata such as those provided by hillside bogs in the longleaf pine hills, peaty savannas, pine-palmetto flatwoods, and sphagnous bogs. Both *L. beyrichianum* and *L. anceps* have a wider range of tolerance to soil moisture in that they may be found on quite dry sandy sites, sometimes even in association with turkey oak (*Quercus laevis*)."

The *A. Chase 10365*, distributed as *Lachnocaulon* sp., is actually *Paepalanthus incanus* (Bong.) Körn., while *Hood 4267*, at least insofar as the University of Illinois specimen is concerned, is

Gyrotheca tinctoria (Walt.) Salisb.

LACHNOCAULON ANCEPS (Walt.) Morong Figure 6

Additional & emended synonymy: *Eriocaulon anceps* Walt., Fl. Carol. 83. 1788. *Eriocaulon villosum* Michx., Fl. Bor.-Am. 2: 166. 1803 [not *E. villosum* Salzm., 1855, nor Willd., 1856]. *Eriocaulon pubigerum* Bong., Mém. Acad. Imp. Sci. St. Pétersb., sér. 6, 1: 628, pl. 42. 1831. *Lachnocaulon michauxii* Kunth, Enum. Pl. 3: 497. 1841. *Lachnocaulon michauxi* Kunth apud Benth. & Hook. f., Gen. Pl. 3 (2): 1024. 1883. *Lachnocaulon anceps* Morong apud Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 55. 1930. *Lachnanthes michauxii* Kunth ex Moldenke, Phytologia 3: 471, in syn. 1951. *Sacnocaulon auceps* Cuthbert ex Moldenke, Phytologia 3: 471, in syn. 1951. *Lachnocaulon villosum* Kunth ex Moldenke, Résumé Suppl. 1: 18, in syn. 1959. *Eriocaulon anceps* (Walt.) Morong ex Moldenke, Résumé Suppl. 4: 11, in syn. 1962. *Lachnocaulon anceps* (Wahl.) Morong ex Moldenke, Résumé Suppl. 4: 11, in syn. 1962 [not *L. anceps* Benth. & Hook. f., 1903]. *Lachnocaulon anceps* (Walt.) Ell. ex Moldenke, Résumé Suppl. 4: 11, in syn. 1962. *Eriocaulon villosum* El. ex Moldenke, Résumé Suppl. 17: 11, in syn. 1968. *Lachnocaulon anceps* Walt., in herb. *Lachnocaulon anceps* (Walt.) Moray, in herb.

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It should be noted here that *L. anceps* Benth. & Hook. f. is a synonym of *L. digynum* Körn., *Eriocaulon villosum* Salzm. (mentioned also in the synonymy above) is a synonym of *Paepalanthus bifidus* (Schrad.) Kunth, and *E. villosum* Willd. belongs in the synonymy of *Eriocaulon decangulare* L. Steudel (1821, 1840) reduces *E. anceps* Walt. to synonymy both under *E. compressum* Lam. [as "*E. gnaphalioides* Michx."] and what he calls "*E. villosum* Michx."

Recent collectors describe this plant as having the flowering heads white or bluish-white, the leaves short, and the peduncles 3 times as long as the leaves, to 1.5 dm. tall. They have found it growing in bogs, open bogs, and shrub bogs, swamps, savannas, grassy open acid savannas, *Sphagnum* bogs, creek bottoms, peat-sedge bogs, and in argillaceous and siliceous boggy depressions, on seepage slopes in pinelands, wet sandy or gravelly slopes, and sandy-peaty ditch banks, along railroad tracks, and among young pines. It has been found growing in sandy peat of flatwood bogs, in hardwood forests, roadside clearings and ditches, sandy bottoms, moist ground of savannas, and in low ground and moist sandy soil in general, in sandy openings in *Pinus taeda* woods, in black mucky soil of low marshy open areas, and in fine sandy soil of open pastures with grass, small scattered pines, etc. Lakela found it on low seasonally wet and weedy roadsides with Typha, Thalia, Hibiscus, Teucrium, Polygala, grasses, and sedges, bordered by open grazed pinelands. Fernald & Long describe it as forming a continuous turf in Sphagnum bogs.

Cory reports that the species forms mats in wet sandy places in open woods; Correll & Johnston say that it forms large clumps on seepage slopes in savanna areas; Kral found it forming frequent clumps on moist sand of roadside ditches; while Bell encountered it along wet roadsides and in burned-over shrub savannas. Other collectors have found it in moist sand of roadside ditches, in low flat areas, on dry sandy pond margins, in moist grassy areas, roadside clearings, low longleaf pine woods, and low marshy areas in coniferous woods, in ditches, low wet or sandy ditches, and wet drainage ditches, in peaty excavated areas on savannas, in savanna-like grassy areas, by pineland pools, in seepage bogs and springheads, pineland savannas, moist cutover pinelands, low or wet open pinewoods, moist or moist peaty pinelands, and in pocosins. It grows in low Sphagnum bogs, pine flatwoods, the low borders of sandhills, and low ditches in pine barrens, in the coastal flatwoods, especially in the moist sand of such flatwoods, and in the turkey oak community, at altitude up to 1100 feet, flowering and fruiting from March to September. Iltis 1253, from Caroline County, Virginia, bears a notation "northernmost station for the species". Buell 1934 is obviously very immature, while Chapman C.430 is labeled "Lachnocaulon n. sp.?" Recorded vernacular names for the plant are "hat-pin" and "hairy pipewort".

Radford, Ahles, & Bell (1964) state that in the Carolinas it blooms from May to October and is found in "Bogs, savannas, ditches, low pinelands; chiefly cp. [Coastal Plain]." Harper (1906) records it from Berrien, Coffee, Colquitt, Decatur, Emanuel, Irwin, Montgomery, and Tattnall Counties, Georgia. The initial letter of the specific epithet of Michaux's binomial is sometimes uppercased for no valid reason.

The white pistillate florets of this plant mingled with the brown staminate ones impart a mixed gray and dark appearance to the flower heads. The overall distribution of the species is on the Coastal Plain from southeastern Pennsylvania (?) and Virginia to Florida, west along the Gulf Coast to eastern Texas, and south to the Isle of Pines. Thorne (1954) reports it as "frequent" in "Wet sand of moist pinelands, seepage slopes, and bogs". McDaniel describes it as "common" in Sphagnum-Hypericum bogs surrounded by longleaf pines in Forrest County, Mississippi, but only "local" in longleaf pine woods in Stone and "locally common" near pinewoods in Harrison County of the same state.

Kral (1966) reduces L. glabrum Körn. and L. floridanum Small to synonymy under L. anceps, but in this disposition I do not follow him. He describes the habitat of the species as "Moist to fairly dry sands, sandy peats or peat of pine flatwoods, savannas, upper edge of pinelands, pond margins, ditchbanks, lakeshores, and bogs, Florida north to New Jersey, west to eastern Texas." Personally, in my forty years of work on the group, I have seen no material of this species from New Jersey, and Kral does not cite the New Jersey collection on which he bases his statement. Similarly, I am not at all certain that the Schweinitz specimen, cited below as from Pennsylvania, actually was collected in that state. If it was, the locality is probably destroyed now. The type of the species was gathered by Thomas Walter in "Carolina" [probably South Carolina].

Kral (1966) discusses this species as follows: "There are difficulties in distinguishing smaller-headed versions of L. anceps from L. minus or from L. beyrichianum. These, however, will have the clavate-whitened, hair on the bracts and sepals to distinguish them from the former, and a definitely ridged-and-striate seed to distinguish them from the latter. Also, none of the other Lachnocaulons have, in their older, 'seeding' heads, the property of well-exserted bracts and female sepals. This imparts a 'chaffy' look to late summer inflorescences.

"J. K. Small (1903) described L. floridanum as a species distinct from L. anceps on the basis of its glabrous scapes and smaller, grayer, heads. Examination of specimens so identified as well as the type ('Fla. Lake Co.: lake, Eustis, Nash 1981') together with a field study of populations of south Florida Lachnocaulon have served to convince me that such differences are not consistent, in that they may vary broadly within a single population. Such is the case in populations of these in Manatee, Martin, Sarasota, St. Lucie, De Soto and Charlotte counties in peninsular Florida. The type specimen is itself an immature example, hence the anther measurements which are used as one basis for distinguishing the species are of young, accrescent, structure. The glabrous peduncles which are supposed to distinguish L. glabrum from L. anceps are not consistently glabrous in the above mentioned counties of Florida."

Material of L. anceps has been misidentified and distributed in herbaria under the names Duptaya flavidula (Michx.) Kuntze, Eriocaulon compressum Lam., E. decangulare L., E. gnaphaloides Michx., E. körnickianum Van Heurck & Muell.-Arg., E. ravenelii Chapm., E. revenelii Chapm., E. septangulare With., E. texense Körn., Lachnocaulon digynum Holm, L. glabrum Körn., L. minus (Chapm,) Small, and Syngonanthus flavidulus (Michx.) Ruhl.

On the other hand, the S. M. Tracy 7586, distributed as L. anceps, is actually the type collection of L. anceps f. glabrescens Moldenke, Beyrich s.n. [Ebenezer, 8/7/1833], Fox & Boyce 3780, M. C. Reynolds s.n. [Mar.—June 1875], and B. W. Wells s.n. [Burgaw, 6/7/1945] are L. beyrichianum Sporleder, Curtiss 6201 and F. H. Sargent s.n. [June 19, 1950] are L. minus (Chapm.) Small, C. Owens 154 and A. Ruth s.n. [De Soto Falls, July 1898] are Eriocaulon lineare Small, Tharp 44343 is E. texense Körn., and S. B. Jones s.n. [8 May 1960] is Syngonanthus flavidulus (Michx.) Ruhl. Schallert 16912 is a mixture of Lachnocaulon anceps and Syngonanthus flavidulus.

Additional citations: PENNSYLVANIA: County undetermined: Schweinitz s.n. [e Pensylvania] (Mu--321). VIRGINIA: Caroline Co.: Iltis 1253 (Ws). Greensville Co.: J. T. Baldwin Jr. 14808 (N); Fernald & Long 8630 (Ok, S); Mikula 3425 (N), 8687 (N); Smith & Hodgdon s.n. [Plant. Exsicc. Gray. 1028] (Ca--717803, Hi--21934, Hi--54013, Ms--83593, Ok, S, Se--201223, Ut--69802b, Ws). King & Queen Co.: Mikula 5748 (N). Nansemond Co.. Fernald, Long, & Clement 15239 (N). Prince George Co.: Fernald, Long, & Smart 5698 (S). Southampton Co.: Mikula 8009 (N). Sussex Co.: Fernald & Long 8181 (Mi). NORTH CAROLINA: Beaufort Co.: Fox, Whitford, & Price 260 (No--14249); Wood & Clement 6939 (St), 6969 (Hi--51164). Bladen Co.: Ahles 456/48 (Ur); Ahles & Haesloop 29106 (Hi--135330); Davis & Davis 10498 (We); A. R. Moldenke 462 (Fg); Oosting 3555 (Hi). Brunswick Co.: C. R. Bell 13282 (Hi--135340); R. K. Godfrey 48391 (No--17465). Chowan Co.: Ahles & Duke 47911 (Hi--135337). Columbus Co.: C. R. Bell 12712 (Hi--135339); A. E. Radford 4095 (Hi--47813). Craven Co.: A. E. Radford 37642 (Hi--135343). Cumberland Co.: C. R. Bell 219 (Hi--33704); Fox & Godfrey 2616 (N); Radford & Stewart s.n. [Oct. 8, 1939] (Hi--13477); Ripley & Barneby 7326 (N). Duplin Co.: A. C. Mathews s.n. [June 6, 1932] (Hi). Greene Co.: A. E. Radford 36643 (Hi--135328). Harnett Co.: Fox & Godfrey 2557 (N); H. Laing 1454 (Hi--118261); A. E. Radford 42769 (Hi--136140). Hoke Co.: Ahles & Neuber 25046 (Hi--118263). Iredell Co.: M. E. Hyams s.n. [Statesville] (Dt, Dt). Johnston Co.: Houten & Schoenmakers 978 (Ut--52777a); A. E. Radford 27884 (Hi--118264). Jones Co.: A. E. Radford 36927 (Hi--135335, Hi--135336). Lee Co.: S. Stewart 835 (Hi--135338). Lenoir Co.: A. E. Radford 25628 (Hi--118265); Randolph & Randolph 785 (Vi). Martin Co.: J. A. Drushel 10812 (Ur), s.n. [5/29/35] (No--20636); A. E. Radford 38323 (Hi--135331). Montgomery Co.: A. E. Radford 19499 (Hi--135323). Moore Co.: Blankinship s.n. [Southern Pines, July 18, 1895] (Lb--20644). New Hanover Co.: B. W. Wells s.n. [June 2, 1924] (No--2638). Onslow Co.: Ahles & Haesloop 28131 (Hi--135327). Pamlico Co.: R. K. Godfrey 48295 (No--17467); A. E. Radford 35806 (Hi--135333). Pender Co.: Ahles & Haesloop 27941 (Hi--135326); A. E. Radford 5149 (Hi--50209). Pitt Co.: M. C. Helms 1011 (Hi--170130). Richmond Co.: A. E. Radford 14423 (Hi--118266). Robeson Co.: Blomquist & Wilbur 15183 (N); Britt 2297 (Hi--167120); Terrell 3066 (Hi--118267). Sampson Co.: Ahles & Haesloop 30030 (Hi--135329). Scotland Co.:

Ahles & Hammond 24910 (Hi--118269); Radford & Stewart 455 (Hi--21284). Wake Co.: Buell 1934 (No--2646); R. K. Godfrey 3989 (No-2640); Morris s.n. [Raleigh] (Ca--379008). Washington Co.: A. E. Radford 38849 (Hi--137367); Wood & Clement 6939 (Hi--51188). Wayne Co.: Duke 2637 (Hi--134742); A. E. Radford 25471 (Hi--127339). Wilson Co.: A. E. Radford 35596 (Hi--135332), 38101 (Hi--135334), 44406 (Ms--47415). County undetermined: Collector undetermined s.n. (S); G. McCarthy s.n. [Julio 1885] (Hi). SOUTH CAROLINA: Aiken Co.: Eggert s.n. [25 May 1899] (Ut--799b). Allendale Co.: Ahles & Bell 12573 (Hi--137393). Bamberg Co.: Ahles & Haesloop 26059 (Hi--118253). Barnwell Co.: Batson & Kelley 35 (Hi--140172, Hi--140173), s.n. [June 13, 1952] (Hi--140171), s.n. [June 27, 1952] (Hi--140174), s.n. [July 1, 1957] (Hi--140175). Berkeley Co.: Ahles & Haesloop 26428 (Hi--118254, Se--199100); Ravenel s.n. [Santee Canal, July] (Ms--15492). Charleston Co.: Ahles & Haesloop 25665 (Hi--118256); Cabanis s.n. [near Charleston] (B). Chesterfield Co.: A. E. Radford 12435 (Hi--118255). Clarendon Co.: A. E. Radford 24510 (Hi--135342). Colleton Co.: C. R. Bell 2284 (Hi--133982). Darlington Co.: W. C. Coker s.n. [July 5, 1909] (Hi); J. B. Norton s.n. [July 8, 1920] (Hi), s.n. [Apr. 26, 1921] (Hi); Radford & Stewart 401 (Hi--15971, N); B. E. Smith s.n. [5/25/32] (Hi--77050). Dillon Co.: Ahles & Haesloop 27843 (Hi--135325). Dorchester Co.: Ahles & Haesloop 26318 (Hi--118257). Edgefield Co.: A. E. Radford 26527 (Hi--118258). Florence Co.: C. R. Bell 7568 (Hi--118259); Ravenel s.n. [Florence, July 1879] (Br). Georgetown Co.: Godfrey & Tryon 51 (Ca--957182); A. E. Radford 24968 (Hi--118260). Hampton Co.: C. R. Bell 2531 (Hi--133980). Horry Co.: C. R. Bell 7784 (Hi--118262); Houten & Schoenmakers 1042 (Ut--52776a). Kershaw Co.: H. D. House 2644 (E). Lexington Co.: A. E. Radford 23344 (Hi--133981). Marion Co.: C. R. Bell s.n. [July 2, 1958] (Hi--135341). Marlboro Co.: A. E. Radford 12544 (Hi--118268, N). Orangeburg Co.: Ahles & Haesloop 25434 (Hi--139435). Sumter Co.: A. E. Radford 23847 (Hi--135324). Williamsburg Co.: A. E. Radford 24720 (Hi--118270). County undetermined: Beyrich s.n. [Carolina] (B); Bosc s.n. [Carolina, 1807] (B); Herb. Durand s.n. (Ms--15494).

GEORGIA: Calhoun Co.: R. F. Thorne 3589 (N), 4571 (Vi), 4684 (Ca--906388). Clay Co.: R. F. Thorne 3669 (We). Clinch Co.: R. Kral 24289 (N). Dodge Co.: Biltmore Herb. 2755d (S). Douglas Co.: Cronquist 5424 (Ca--777561, Mi, N). Glynn Co.: Harmer 881 (S). Grady Co.: A. R. Moldenke 303 (Fg). Jeff Davis Co.: A. R. Moldenke 351 (Fg). Lowndes Co.: A. R. Moldenke 317 (Fg, S). Miller Co.: R. F. Thorne 4196 (Mi), 4217 (Mi, We), 4426 (Ca--906389, N, Vi). Pierce Co.: R. Kral 24150 (N). Screven Co.: A.

R. Moldenke 414 (Fg). Sumter Co.: R. M. Harper 443 (Ms--15496). Ware Co.: A. R. Moldenke 341 (Fg). County undetermined: Ellis s. n. [Georgia] (Ws). FLORIDA: Bay Co.: R. F. Martin 1708 (N). Bradford Co.: Meebold 28103 (Mu). Clay Co.: W. M. Canby s.n. [Hibernia, March 1869] (Dt), s.n. [Hibernia, 1869] (Ca--216804). Dixie Co.: R. K. Godfrey 59650 (Hi--155059), Duval Co.: Curtiss 3021 (Ca--2423, Ms--15495, Mu--373, Vi), 4139 (Ca--59416), 4861 (Ca--115161); Lighthipe 173 [Herb. Umbach 10992] (Ws), s.n. [So. Jacksonville, Apr. 13, '97] (S). Franklin Co.: R. K. Godfrey 55718 (Hi--102375, Vi); Godfrey, Reese, & Redfearn 53425 (Hi--157561, N); A. R. Moldenke 293 (Fg). Gulf Co.: R. K. Godfrey 57102 (Ca--112499). Highlands Co.: Meebold 28104 (Mu). Hillsborough Co.: Lakela 25369 (N). Lake Co.: G. V. Nash 1942 (Mm--7954). Levy Co.: Godfrey & Lindsey 56981 (Ca--112547); Kral & Kral 6918 (N). Liberty Co.: Chapman C.430 (W--936872); A. R. Moldenke 280 (Fg), 285 (Fg). Manatee Co.: Perdue 1765 (Ca--49688, Rf, Ur, Ut--61198b). Marion Co.: Meebold 28098 (Mu); P. O. Schallert 5447 (Mu). Okeechobee Co.: R. Kral 20478 (N). Osceola Co.: R. Kral 20468 (N); Schallert 16912, in part (Ut--89890b); Singletary s.n. [Feb. 29, 1936] (No--2633). Pasco Co.: Armstrong & Armstrong s.n. [Crystal Spring, July 10, 1922] (E--911458); P. Wiegand 7784 (St). Saint Johns Co.: Godfrey & Lindsey 56960 (Ca--112476); M. C. Reynolds s.n. [Mar.--June 1875] (Ms--15493). Santa Rosa Co.: Kral & Redfearn 2934 (Hi--111314). Sumter Co.: R. Kral 6854 (Hi--132224, N). Volusia Co.: R. Kral 20443 (N), 20453 (N). County undetermined: Bory de St. Vincent s.n. [Fla. or Miss.] (V, V); Herb. Chapman s.n. [Florida] (Ok). ALABAMA: Baldwin Co.: S. B. Jones s.n. [7 May 1960] (Hi--210888); W. Wolf s.n. [Elberta, July 5, 1926] (Ca--841813). Duval Co.: Curtiss 3021 (Mm--7952), 4861 (Mm--7953). Escambia Co.: X. M. Gaines 165 (N). Mobile Co.: G. L. Fisher s.n. [Mobile, May 12, 1928] (Ew). Montgomery Co.: Olds s.n. [Montgomery, 3.20.94] (Ws). County undetermined: Buckley s.n. [Alabama, July 1840] (Br, Br), s.n. (E). MISSISSIPPI: Forrest Co.: S. McDaniel 3162 (N), 3237 (N). George Co.: Ahles & Bell 7720 (Ur); Demaree 33388 (Z). Hancock Co.: Demaree 35223 (Ss). Harrison Co.: S. McDaniel 3122 (N); Woodson & Anderson 1515 (E--934599). Jackson Co.: Demaree 28670 (N), 30716 (N), 32035 (Le), 35061 (Ss); Diener 180 (Ur); H. J. Jacob 1294 (Hi--196296); S. M. Tracy 5031 (Hi--24867). Lamar Co.: Jones & Reynolds 12324 (N). Pearl River Co.: Jones & Reynolds 11957 (N), 11960 (N); R. Kral 17332 (N); S. McDaniel 3220 (N). Stone Co.: S. McDaniel 3111 (N). LOUISIANA: Beauregard Par.: Ewan 21065 (Ac); R. Kral 20156 (N), 20197 (N); Kral & Ricks 16991 (N). Rapides Par.: R. Kral 20069 (N). Vernon Par.: Gregory

& Eiten 23 (N); R. Kral 20039 (N); R. McVaugh 8457 (Mi). TEXAS: Angelina Co.: Correll & Edwin 16499 (Rf); Correll & Wasshausen 27518 (Ld). Hardin Co.: Cory 52778 (N, Rf, Se—127154), 57125 (Gg); R. L. Crockett 560 (Ld); Lundell & Lundell 11152 (Ld); Tharp & Tyson s.n. [June 27, 1952] (St). Jasper Co.: D. S. Correll 27411 (Ld); Correll & Correll 12522 (Rf); Correll & Johnston 19643 (Rf); Correll, Ogden, & Svenson 28113 (Ld); F. W. Gould 5838 (Ca—978706). Newton Co.: Correll, Johnston, & Edwin 22288 (Ld); Tharp 44346 (S). Tyler Co.: D. S. Correll 37248 (Mi); Tharp, Turner, & Johnston 54955 (Ld, St). ISLA DE PINOS: Ekman 12410 (S). LOCALITY OF COLLECTION UNDETERMINED: Hooker s.n. [s. States] (B). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

LACHNOCAULON ANCEPS f. GLABRESCENS Moldenke

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Kral says of his collection, cited below: "a mixed population of smooth and hairy scape", found in moist sandy peat of slash pine and saw palmetto flatwoods ditchbank, with the flowering heads "gray-white". Material of this form has been misidentified and distributed in herbaria under the name L. digynum Holm.

Citations: FLORIDA: Manatee Co.: S. M. Tracy 7586 (B—isotype, Ca—181776—isotype, Mi—isotype, N—type, S—isotype, Ws—isotype). Martin Co.: R. Kral 20420 (N).

LACHNOCAULON BEYRICHIANUM Sporleder

Bibliography: Körn., Linnaea 27: 567—568. 1856; C. Müll. in Walp., Ann. 5: 920 (1860) and 6: 1203. 1861; Körn. in Mart., Fl. Bras. 3 (1): 295. 1863; Benth. & Hook. f., Gen. Pl. 3 (2): 1024. 1883; Morong, Bull. Torr. Bot. Club 18: 361 & 362. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 19. 1894; Ruhl. in Engl., Pflanzenreich 13 (4-30): 240 & 288. 1903; J. K. Small, Fl. Southeast. U. S., ed. 1, 234 & 235 (1903) and ed. 2, 234, & 235. 1913; J. K. Small, Man. Southeast. Fl. 256. 1933; Moldenke, N. Am. Fl. 19 (1): 46 & 49. 1937; Moldenke, Phytologia 1: 329, 349, 356, & 360. 1939; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 19. 1946; Moldenke, Alph. List Cit. 1: 257. 1946; Moldenke, Known Geogr. Distrib. Erioc. 2, 3, & 42. 1946; Moldenke, Alph. List Cit. 3: 850. 1949: Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 8, 9, & 207. 1949; Moldenke, Phytologia 3: 493. 1951; Moldenke, Résumé 10—12 & 484. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 19. 1960; Moldenke, Résumé Suppl. 4: 2. 1962; Radford, Ahles, & Bell, Guide Vasc. Fl. Carol. 106 & 107. 1964; R. Kral, Sida 2: 317—319 & 331. 1966; Shinners, Sida 2: 443. 1966; Moldenke, Résumé Suppl. 16: [1]. 1968.

Illustrations: R. Kral, Sida 2: 318. 1966.

Recent collectors have found this plant growing on sand hills, in sand on back dunes, at the open edges of bogs, in turkey oak communities, in dry sandy pinelands, and in moist coarse sand, flowering and fruiting in June and July. Kral says of his Saint Lucie County (Florida) collection: "frequent on rather dry sands of slash pine - saw palmetto flatwoods with *L. anceps* and *L. minus* nearby", and of his Volusia County collection: "in large tufts, nearby are *L. minus* and *L. anceps* but these are more abundant on disturbed sands". In his 1966 work he says of *L. beyrichianum*: "Sands, sandy peats and peat of pine flatwoods, moist pineland savannas, pineland pond margins, lakeshores and rather dry oak-pine barrens, central Florida north to southern North Carolina (Bladen Co.)......The affinities of this species to *L. anceps* are at once evidenced by its habit, habitat, leaf and scape indument and, especially by its white-clavate perianth trichomes. Yet the leaves of *L. beyrichianum* are consistently narrower, and its seeds comparatively smooth and lustrous. Such differences, though seemingly minor, appear to hold even in mixed populations of the two."

Radford, Ahles & Bell (1964) state that in the Carolinas the species flowers from May to September and is found in "Sandy shores of pools, very rare". They record it from Alabama, but cite no collection to back up this claim. In forty years I have seen no material of it from Alabama. They distinguish it from the other Carolina species by its mature seeds being smooth, not cancellate or striate.

The type of the species was collected by Heinrich Carl Beyrich at the edges of a swamp near Ebenezer, Effingham County, Georgia, on July 8, 1833. The isotype specimen in the Berlin herbarium was annotated as *L. anceps* by Ruhland in 1900. Jackson (1894) reduces *L. beyrichianum* to synonymy under what he called *L. michauxii* Kunth, which is what we now know as *L. anceps* (Walt.) Morong.

Material of *L. beyrichianum* has been misidentified and distributed in herbaria under the names *L. anceps* (Walt.) Morong, *L. glabrum* Körn., *L. michauxii* Kunth, and *L. minus* (Chapm.) Small. On the other hand, the *R. Kral 20418*, distributed as *L. beyrichianum*, is actually *L. glabrum* Körn., while *G. V. Nash 148, 1295, & 1855* are *L. minus* (Chapm.) Small.

Additional citations: NORTH CAROLINA: Bladen Co.: *Buell & West 1742* (No—2643); *Fox & Boyce 3780* (N, No—29707); *R. K. Godfrey s. n.* [White Lake, 6-20-1937] (No—2639). New Hanover Co.: *R. K. Godfrey 4680* (No—2647). Pender Co.: *A. C. Martin s.n.* [Burgaw, 5/17/1925] (No—2642); *B. W. Wells s.n.* [Rowes Bridge, Burgaw, 7/13/1927] (No—2641), *s.n.* [Rowes Bridge, Burgaw, 6/9/1929] (No—2637), *s.n.* [Burgaw, 6/7/1945] (No—2636). SOUTH CAROLINA: Horry Co.: *W. C. Coker s.n.* [Myrtle Beach, June 23, 1931] (Hi—24072). GEORGIA: Effingham Co.: *Beyrich s.n.* [Ebenezer, 8/7/1833] (B—isotype). FLORIDA: Saint Johns Co.: *M. C. Reynolds s.n.* [Mar.—

June 1875] (Ca—2424). Saint Lucie Co.: R. Kral 20378 (N). Volusia Co.: R. Kral 20441 (N); Tomlinson 10-6-63 D (Ft—272). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

LACHNOCAULON CUBENSE Ruhl.

Bibliography: Ruhl. in Fedde, Repert. Spec. Nov. 22: 34. 1925; A. W. Hill, Ind. Kew. Suppl. 7: 133. 1929; Moldenke, N. Am. Fl. 19 (1): 46 & 48. 1937; Moldenke, Phytologia 1: 329, 351, & 355. 1939; Moldenke, Known Geogr. Distrib. Erioc. 5 & 42. 1946; León, Fl. Cub. 1: 284 & 426. 1946; Moldenke, Alph. List Cit. 1: 187. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 44 & 207. 1949; Moldenke, Résumé 52 & 484. 1959.

Additional citations: CUBA: Las Villas: Ekman 17118 (S—type).

LACHNOCAULON DIGYNUM Körn.

Additional & emended synonymy: Lachnocaulon anceps Benth. & Hook. f. apud Ruhl. in Engl., Pflanzenreich 13 (4-30): 242 & 288, in syn. 1903 [not L. anceps (Wahl.) Morong, 1962, nor (Walt.) Ell., 1962, nor (Walt.) Moray, 1970, nor (Walt.) Morong, 1891]. Eriocaulon digynum Körn. ex Moldenke, Alph. List Cit. 3: 806, sphalm. 1949. Lachnocaulon digynum Holm ex Moldenke, Résumé Suppl. 1: 18, in syn. 1959.

Bibliography: Körn., Linnaea 27: 570—571. 1856; C. Müll. in Walp., Ann. 5: 921 (1860) and 6: 1203. 1861; Körn. in Mart., Fl. Bras. 3 (1): 286, 288, & 294. 1863; Van Heurck & Muell.-Arg. in Van Heurck, Obs. Bot. 1: 108. 1870; Benth. & Hook. f., Gen. Pl. 3 (2): 1024. 1883; Morong, Bull. Torr. Bot. Club 18: 362. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 19. 1894; Ruhl. in Engl., Pflanzenreich 13 (4-30): 13, 16, 240, 242, & 288. 1903; J. K. Small, Fl. Southeast. U. S., ed. 1, 234 & 235 (1903) and ed. 2, 234 & 235. 1913; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 55. 1930; J. K. Small, Man. Southeast. Fl. 256. 1933; Moldenke, N. Am. Fl. 19 (1): 46 & 48—49. 1937; Moldenke, Phytologia 1: 329, 350, 358, & 360. 1939; Moldenke, Known Geogr. Distrib. Erioc. 3 & 42. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 19. 1946; Moldenke, Phytologia 2: 491. 1948; Moldenke, Alph. List Cit. 2: 460 (1948) and 3: 806. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 9, 11, & 207. 1949; Moldenke, Phytologia 3: 493—494. 1951; Moldenke, Résumé 12, 14, 302, & 484. 1959; Moldenke, Résumé Suppl. 1: 18. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 19. 1960; Moldenke, Résumé Suppl. 3: 3. 1962; R. Kral, Sida 2: 315--317 & 325—327. 1966; Shinners, Sida 2: 443. 1966; Moldenke, Résumé Suppl. 16: [1]. 1968.

Illustrations: R. Kral, Sida 2: 326. 1966.

The L. anceps (Walt.) Morong, referred to in the synonymy above, is, of course, a valid species of which the various variants in accredition there listed are synonyms. Morong (1891) says of L. digynum "I have not seen specimens of this. Körnicke attributes it to Alabama, from whence it was sent by Bentham....It is regarded by Benth. and Hook. l. c. as probably a depauperate form of L. anceps, with heads not yet well developed, but it appears to me to come much nearer to L. Beyrichianum. Fresh specimens are very desirable."

On the labels of his collections, cited below, Kral says that he found this plant growing "on exposed wet sands of seepage bogs", "on bulldozed sandy peaty pineland pond margin", and "on wet sandy peat of seepage by pine flatwoods pond". He describes the "heads dull gray-brown" and notes that the "plants have leaves startlingly short and Polytrichum-like". In his 1966 work he describes its habitat as "Wet acid exposed sands and sandy peats or seepage bogs, pineland pond margins, ditches and roadbanks, coastal plain, northwestern Florida west to southern Mississippi. Type. Alabama. This species, which is particularly abundant in the wet pine flatwoods country about Pensacola, Florida, has the smallest leaves of all the Lachnocaulon of the United States. The small rosettes, densely aggregated on slender ascending rhizomes into bright green, convex tufts of sometimes hundreds of individuals, remind one of some of the larger Polytrichums. The 2-carpellate condition of the gynoecium is consistent throughout all samples of this species so far examined, there being no evidence at all of any aborted third carpel either in the ovulary or in the style branching. The only other species of Lachnocaulon which I have found in association with this one is L. anceps, from which it is readily distinguished in the field by its glabrous or almost glabrous scapes, its shorter stature, and its darker, smaller heads." It has been collected in flower and fruit from July to September.

The S. M. Tracy 7586, distributed as L. digynum, is actually the type collection of L. anceps f. glabrescens Moldenke.

Additional citations: ALABAMA: Baldwin Co.: W. Wolf s.n. [Elberta, Aug. 21, 1925] (Ca--841814). FLORIDA: Bay Co.: R. Kral 15667 (N). Escambia Co.: R. Kral 17634 (N), 23169 (N). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

LACHNOCAULON ECILIATUM Small

Bibliography: J. K. Small, Fl. Southeast. U. S., ed. 1, 234, 235, & 1328. 1903; Prain, Ind. Kew. Suppl. 3: 99. 1908; J. K. Small, Fl. Southeast. U. S., ed. 2, 234 & 235. 1913; J. K. Small, Man. Southeast. Fl. 256—257. 1933; Moldenke, N. Am. Fl. 19 (1): 46 & 49. 1937; Moldenke, Phytologia 1: 330, 349, 352, 354, & 356. 1939; Moldenke, Known Geogr. Distrib. Erioc. 3 & 42. 1946; Moldenke, Alph. List Cit. 1: 42, 138, & 257. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 9 & 207. 1949; Moldenke, Phytologia 3: 494. 1951; Moldenke, Résumé 12 & 484. 1959; R. Kral, Sida 2: 315 & 321. 1966; Shinners, Sida 2: 443. 1966; Moldenke, Phytologia 18: 437. 1969.

Recent collectors have found this plant growing on the sandy shores of small lakes, flowering and fruiting in January and June. Material of it has been misidentified and distributed in herbaria as L. glabrum Körn. and Eriocaulon ravenelii Chapm. The

R. M. Harper 8, cited below, is a mixture with L. engleri Ruhl.

Kral (1966) reduces L. eciliatum to synonymy under L. minus (Chapm.) Small, which see in these series of notes for his discussion of his reasons for so doing. However, on the label of Kral 17747 from Walton County, Florida, he suggests that L. eciliatum may be a natural hybrid between L. engleri and L. minus.

Additional citations: FLORIDA: Lake Co.: Bright 3842 (Ws). Putnam Co.: R. M. Harper 7 (W--513490), 8, in part (W--513491). Walton Co.: Curtiss 3022 (Ca--189378--isotype, Mu--374--isotype).

LACHNOCAULON EKMANNII Ruhl.

Synonymy: Lachnocaulon ekmanii Ruhl. apud A. W. Hill, Ind. Kew. Suppl. 7: 133. 1929.

Bibliography: Ruhl. in Fedde, Repert. Spec. Nov. 22: 34. 1925; A. W. Hill, Ind. Kew. Suppl. 7: 133. 1929; Moldenke, N. Am. Fl. 19 (1): 46 & 47. 1937; Moldenke, Phytologia 1: 317, 330, 351, 355, & 360. 1939; Moldenke, Known Geogr. Distrib. Erioc. 5 & 42. 1946; León, Fl. Cub. 1: 284 & 426. 1946; Moldenke, Alph. List Cit. 1: 91, 92, & 187 (1946) and 3: 930. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 44 & 207. 1949; Moldenke, Phytologia 3: 494. 1951; Moldenke, Résumé 52 & 484. 1959; Moldenke, Résumé Suppl. 18: 12. 1969.

As pointed out by me previously [Phytologia 1: 330. 1939], Ruhland apparently spelled the specific epithet of this taxon "ekmannii" purposely and I see no valid reason for "correcting" it. The so-called "correction" of the original spellings of scientific names is most highly undesirable and should be avoided wherever and whenever possible since various "experts" often "correct" spellings differently and this can lead to almost endless confusion. There is practically no end to the number of names that could and would be "corrected" if this practice were to become established.

Additional citations: CUBA: Pinar del Río: Ekman 18132 (S), 18757 (N--photo of type, S--type, Z--photo of type).

LACHNOCAULON ENGLERI Ruhl.

Emended synonymy: Eriocaulon maritimum Chapm. ex Moldenke, Phytologia 1: 330, in syn. 1939. Lachnocaulon glabrum Chapm. ex Moldenke, Phytologia 1: 330, in syn. 1939 [not L. glabrum Körn., 1856]. Lachnocaulon maritimum Torr. ex Moldenke, Phytologia 1: 330, in syn. 1939.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 240, 241, & 288. 1903; J. K. Small, Fl. Southeast. U. S., ed. 1, 234 & 235. 1903; Prain, Ind. Kew. Suppl. 3: 99. 1908; J. K. Small, Fl. Southeast. U. S., ed. 2, 234 & 235. 1913; J. K. Small, Man. Southeast. Fl. 256. 1933; Moldenke, N. Am. Fl. 19 (1): 46 & 47. 1937; Moldenke, Phytologia 1: 330, 349, 353, 356, 357, 359, & 360. 1939; Worsdell, Ind. Lond. Suppl. 2: 28. 1941; Moldenke, Known Geogr. Distrib. Erioc. 3 & 42. 1946; Moldenke, Alph. List Cit. 1: 25, 59, 98, 99, 116, & 257. 1946; Hill & Salisb., Ind. Kew. Suppl. 10:

86 & 126. 1947; Moldenke, Phytologia 2: 491 & 494. 1948; Moldenke, Alph. List Cit. 2: 460, 461, 507, 508, & 512 (1948), 3: 760, 777, 778, 808, & 813 (1949), and 4: 1117, 1187, & 1201. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 9 & 207. 1949; Moldenke, Phytologia 3: 142 (1949) and 3: 494--495. 1951; Moldenke, Résumé 12, 287, 291, & 484. 1959; Moldenke, Résumé Suppl. 3: 3 (1962) and 10: [1]. 1964; R. Kral, Sida 2: 316, 317, & 323--325. 1966; Shinners, Sida 2: 443. 1966; Moldenke, Résumé Suppl. 16: [1] (1968), 17: 10 (1968), and 18: 12. 1969; Moldenke, Phytologia 18: 376, 425, 426, & 437. 1969.

Illustrations: J. K. Small, Man. Southeast. Fl. 256. 1933; R. Kral, Sida 2: 324. 1966.

Recent collectors have found this species growing on sand beaches and in brackish sand, flowering and fruiting from June to September and in December. Kral describes his collection from Walton County, Florida, in these words: "heads chocolate-brown, mixed with dull brown ones of L. minus". He further avers that the plant is "a weed in sandy peat of ditchbank through slash pine - saw palmetto flatwoods" and "growing in sandy peaty margin of small lake in longleaf pine - turkey oak hills, mixed with L. minus". Hawkes describes it as "a common tufted herb in wet sandy pinewoods". Curtiss found the plant "spreading flat on moist cultivated ground" in Volusia County, identified it as Paepalanthus pilulifer Körn., and regarded it as "native to Brazil" and therefore merely introduced in Florida. In this identification he was, of course, quite in error. Tomlinson found L. engleri "in wet sand at margin of lake, not inundated and forming a more or less continuous peripheral zone".

Kral (1966) describes the habitat of L. engleri as "Moist sands, sandy-peats or peat-muck of pineland pond margins, lakeshores, and mildly acid marshes along the seacoast, coastal plain, the lower Pleistocene terraces, Florida. Type. Ditches and lakeshores in the vicinity of Eustis, Lake Co., Florida, Nash 1184. The dark brown inflorescence, glabrous scape, and deep-brown, lustrous seed of this species distinguish it from all others of the genus that have been found in Florida.

"The almost 'spontaneous' development of large numbers of this species on recently disturbed wet sands or upon the drying peat left by fluctuating lake and pond margins in Florida makes one wonder whether any habitat of relative permanence is occupied by this species. Certainly its seed must have an inherent capacity to remain dormant for such extended periods of times as necessary for such ephemeral habitats to recur. A similar behavior is noted for L. minus, a species with which L. engleri most frequently is found."

Material has been misidentified and distributed in herbaria under the names L. glabrum Körn., Eriocaulon ravenelii Chapm., and Paepalanthus pilulifer Körn. The R. M. Harper 8, cited below, is a mixture with L. eciliatum Small.

Additional citations: FLORIDA: Highlands Co.: McFarlin 9599

(N); *W. S. Phillips 2304* (Tu--79290); *Tomlinson 10-6-63 L* (Ft--271). Lake Co.: *Goodale s.n.* [Mt. Dora, April 7, 1933] (Ms--69816); *G. V. Nash 1184* (B--type, Ca--115164--isotype, Mm--7951--isotype, Ms--15502--isotype). Martin Co.: *R. Kral 18235* (N), *20386* (N). Orange Co.: *A. D. Hawkes 676* (Ca--1216531). Polk Co.: *McFarlin 3256* (Mi), *3262* (Mi). Putnam Co.: *R. M. Harper 8*, in part (W--513491). Santa Rosa Island [Santa Rosa Co.]: *Fassett 19914* (Ws). Volusia Co.: *Curtiss 6894*, in part (Ca--142526); *R. Kral 18426* (N). Walton Co.: *R. Kral 17746* (N).

LACHNOCAULON FLORIDANUM Small

Bibliography: J. K. Small, Fl. Southeast. U. S., ed. 1, 234, 235, & 1328. 1903; Prain, Ind. Kew. Suppl. 3: 99. 1908; J. K. Small, Fl. Southeast. U. S., ed. 2, 234 & 235. 1913; J. K. Small, Man. Southeast. Fl. 256. 1933; Moldenke, N. Am. Fl. 19 (1): 46--48. 1937; Moldenke, Phytologia 1: 330, 349, & 359. 1939; Moldenke, Known Geogr. Distrib. Erioc. 3 & 42. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 9 & 207. 1949; Moldenke, Alph. List Cit. 3: 760. 1949; Moldenke, Phytologia 3: 495. 1951; Moldenke, Résumé 12 & 484. 1959; R. Kral, Sida 2: 315, 319, & 321. 1966; Shinners, Sida 2: 443. 1966.

Kral (1966) feels that this species should be reduced to synonymy under *L. anceps* (Walt.) Morong. Material of it has been misidentified and distributed in herbaria as *L. glabrum* Körn.

Additional citations: FLORIDA: Lake Co.: *G. V. Nash 1981* (Ms--15501--isotype).

LACHNOCAULON GLABRUM Körn.

Bibliography: Körn., Linnaea 27: 568--569. 1856; C. Müll. in Walp., Ann. 5: 920--921. 1860; A. W. Chapm., Fl. South. U. S., ed. 1, pr. 1, 504. 1860; C. Müll. in Walp., Ann. 6: 1203. 1861; A. W. Chapm., Fl. South. U. S., ed. 1, pr. 2, 504 (1865), pr. 3, 504 (1872), ed. 2, pr. 1, 504 (1883), pr. 2, 504 (1884), pr. 3, 504 (1887), and pr. 4, 504. 1889; Morong, Bull. Torr. Bot. Club 18: 361. 1891; A. W. Chapm., Fl. South. U. S., ed. 2, pr. 5, 504. 1892; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 19. 1894; A. W. Chapm., Fl. South. U. S., ed. 3, 531. 1897; Ruhl. in Engl., Pflanzenreich 13 (4-30): 240, 242, & 288. 1903; J. K. Small, Fl. Southeast. U. S., ed. 1, 234 & 235 (1903) and ed. 2, 234 & 235. 1913; J. K. Small, Fl. Miami 37. 1913; J. K. Small, Man. Southeast. Fl. 256. 1933; Moldenke, N. Am. Fl. 19 (1): 46 & 48. 1937; Moldenke, Phytologia 1: 331, 349, 357, & 362. 1939; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 19. 1946; Moldenke, Known Geogr. Distrib. Erioc. 3 & 42. 1946; Moldenke, Phytologia 2: 491. 1948; Moldenke, Alph. List Cit. 2: 412, 461, 475, 524, & 548 (1948), 3: 753, 877, 941, 942, 944, & 958 (1949), and 4: 1192, 1201, & 1216. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 9, 11, & 207. 1949; Phytologia 3: 80 (1949) and 3: 495. 1951; Moldenke, Résumé 12, 14, & 484. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 19. 1960; Thanikaimoni, Pollen &

Spores 7: 183 & 186, tab. 1. 1965; R. Kral, Sida 2: 315, 319, & 321. 1966; Moldenke, Résumé Suppl. 16: [1]. 1968; Moldenke, Phytologia 17: 490 (1968), 18: 437 (1969), and 19: 75. 1969.

Illustrations: Thanikaimoni, Pollen & Spores 7: 183, tab. 1. 1965.

Collectors have found this plant growing along trails and in moist pinelands, flowering and fruiting in March, May, and December. Tomlinson found it on "sandy prairies, forming small tufts closely appressed to the ground" and "along roadside in sandy scrub".

Kral (1966) reduces this species to synonymy under L. anceps (Walt.) Morong and on the labels of his collections, cited below, tells of finding the plant "in sandy peat of slash pine - palmetto flatwoods bog", "in sandy peat of bank of ditch through slash pine - saw palmetto flatwoods, mixed with a population of L. anceps", "in sandy peaty clearing in pine-palmetto savanna flatwoods: in this area most have glabrous scapes but grade north into more and more pubescent scapes", "scapes ranging from smooth to hairy", and "most of the population in this area with smooth scapes, but not consistently so". In view of these field observations it might be advisable to reduce L. glabrum to the rank of variety or form under L. anceps, but I feel that certainly some nomenclatural recognition should be given it.

Material of L. glabrum has been misidentified and distributed in herbaria as L. beyrichianum Sporleder and as Eriocaulon ravenelii Chapm. On the other hand, the A. C. Martin s.n. [Burgaw, 5/17/1925], distributed as L. glabrum, is actually L. beyrichianum Sporleder; Curtiss 3022 is the type collection of L. eciliatum Small; G. V. Nash 1184 is the type collection of L. engleri Ruhl.; G. V. Nash 1981 is the type collection of L. floridanum Small; Curtiss 5911 is L. minus (Chapm.) Small; P. O. Schallert 16912 is a mixture of L. anceps (Walt.) Morong and Syngonanthus flavidulus (Michx.) Ruhl.; G. Een s.n. [25.3.1951] is Eriocaulon compressum Lam.; A. P. Garber s.n. [S. Florida, 1877] is E. ravenelii Chapm.; and P. O. Schallert 16312 is Syngonanthus flavidulus (Michx.) Ruhl. Meebold 28099, cited below, is a mixture with Syngonanthus flavidulus.

Additional citations: ALABAMA: Escambia Co.: X. M. Gaines 249 (N). FLORIDA: Broward Co.: Tomlinson 15.XII.63 A (Ft--277). Charlotte Co.: R. Kral 18048 (N). Collier Co.: Tomlinson 31-3-63 A (Ft--270, Ft, Ft). Dade Co.: A. A. Eaton s.n. [Orange Glade, Dec. 7, 1903] (Rf); Small, Mosier, & Small 6912 (S). Lee Co.: R. Kral 18012 (N); P. C. Standley 18889 (W--1028668). Marion Co.: Meebold 28102 (Mu). Martin Co.: R. Kral 18288 (N), 20418 (N). Palm Beach Co.: W. B. Fox s.n. [May 10, 1945] (No--15818), s.n. [Delray Beach, May 27, 1945] (We); Meebold 28101 (Mu). Polk Co.: Meebold 28099, in part (Mu). Saint Lucie Co.: R. Kral 20424 (N).

and 1.2 cm. wide, acute to obtuse, cuneate at the commonly sessile base. Inflorescences 1–3, racemose above, diffuse, shorter or longer than the leaf, densely many-flowered, up to 11 cm. long. Flowers very small, subglobose, bilabiate. Dorsal sepal suborbicular-ovate, deeply concave, obtuse or acute, up to 2.6 mm. long. Lateral sepals connate into a broadly obtuse or retuse, deeply concave lamina which is very similar to the dorsal sepal. Petals slightly more than half as long as the sepals, cuneate-oblanceolate or oblong-spatulate, acute or subacute at the broad apex. Lip slightly longer than the petals, broadly rhombic-obovate with erect-incurved sides, abruptly narrowed above to a triangular acute or apiculate apex, up to about 1.8 mm. long and subequally wide above. Column slender, arcuate, a little shorter than the petals.

Junín: Chanchamayo Valley, Río Blanco, about 1400 meters, on coffee trees of the Hacienda St. Teresa, *Köhler s.n.* (type). Schunke Hacienda above San Ramón, 1400–1700 meters, epiphyte in dense forest, flowers greenish white tinged with pink, *Killip & Smith 24854.* Chanchamayo Valley, 1200 meters, *Schunke 1330.* Same locality, 1500 meters, *Schunke s.n., 518.*

Pleurothallis dura Lindl. Fol. Orch. Pleurothallis 32, no. 192. 1859. *Humboldtia dura* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891.

Plant small, slender, apparently up to 14 cm. tall, caespitose. Stems very slender, unbranched or often sparingly branched, entirely concealed by close, lepanthiform sheaths with a spreading hispid mouth, bearing scattered leaves. Leaves oval to oblong-elliptic, shortly and indistinctly petioled, up to 2 cm. long and 6.5 mm. wide, acute or obtuse, cuneate below, coriaceous. Inflorescences commonly solitary, capillary, many times surpassing the leaves, about 3–8 cm. long, racemose, commonly secund, many-flowered, with more or less elongate, recurved pedicels. Flowers up to 6 mm. long, perianth ringent. Sepals free, carinate without. Dorsal sepal ovate-lanceolate, acuminate, deeply concave, about 3.5 mm. long. Lateral sepals lanceolate, similar to the dorsal sepal but rather shorter and much narrower. Petals about a third to a half as long as the dorsal sepal, oblong-oblanceolate, obtuse. Lip longer than the petals, oblong or ovate-oblong, rounded above, with irregular margins, sulcate or bicarinate through the lamina, more or less obscurely angled on each side near the middle or base, about 2 mm. long. Column slightly shorter than the petals, with an apical pair of falcate, obtuse lateral wings.

Junín: Chanchamayo Valley, *Schunke 1158.* Ecuador (type).

The Peruvian collection differs from the type, of which we have seen a record from the Lindley Herbarium, in having usually branched stems and much shorter racemes, with the pedicels of the apparently smaller flowers relatively short. The inflorescence, however, seems to be immature.

Pleurothallis echinocarpa C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 179, t. 17, figs. 1–7. 1942. Figure 51.

Plant medium-sized, up to 20 cm. high, with an abbreviated ascending rhizome. Stems short, stout, approximate, monophyllous, up to 3.5 cm. long, concealed below by 1 or 2 tubular, evanescent sheaths. Leaf erect, linear-oblong to narrowly elliptic, up to 11.5 cm. long and 2.1 cm. wide, acute and mucronate, cuneate at the sessile base. Inflorescence solitary, racemose above, stout, much surpassing the leaf, up to 16.3 cm. long. Raceme up to 8 cm. long, loosely several- (up to 9-) flowered, with a fractiflex rachis. Flowers rather small to medium-sized, campanulate, secund. Sepals reddish green. Dorsal sepal ovate-lanceolate, acute, concave, up to 9.8 mm. long. Lateral sepals obliquely ovate-lanceolate or triangular-lanceolate, acuminate, navicular, a little longer than the dorsal sepal. Petals much shorter than the sepals, yellow-green, obliquely elliptic-lanceolate, acute or short-acuminate, with a small tooth on each side near the base. Lip about equaling the petals, oblanceolate-oblong when viewed from the front, 6–6.4 mm. long, when viewed from the side with a pair of incurved semiorbicular lobules below the middle separated by a fleshy bilobed thickening, minutely biauriculate at the base, denticulate at the broadly obtuse apex. Column short, stout, somewhat shorter than the petals. Ovary densely muricate.

Huánuco: Muña, about 2150 meters, in dry woods, *Macbride 3969.*

Pleurothallis excisa C. Schweinf. Bot. Mus. Leafl. Harvard Univ.: 16: 48, t. 6. 1953. Figure 52.

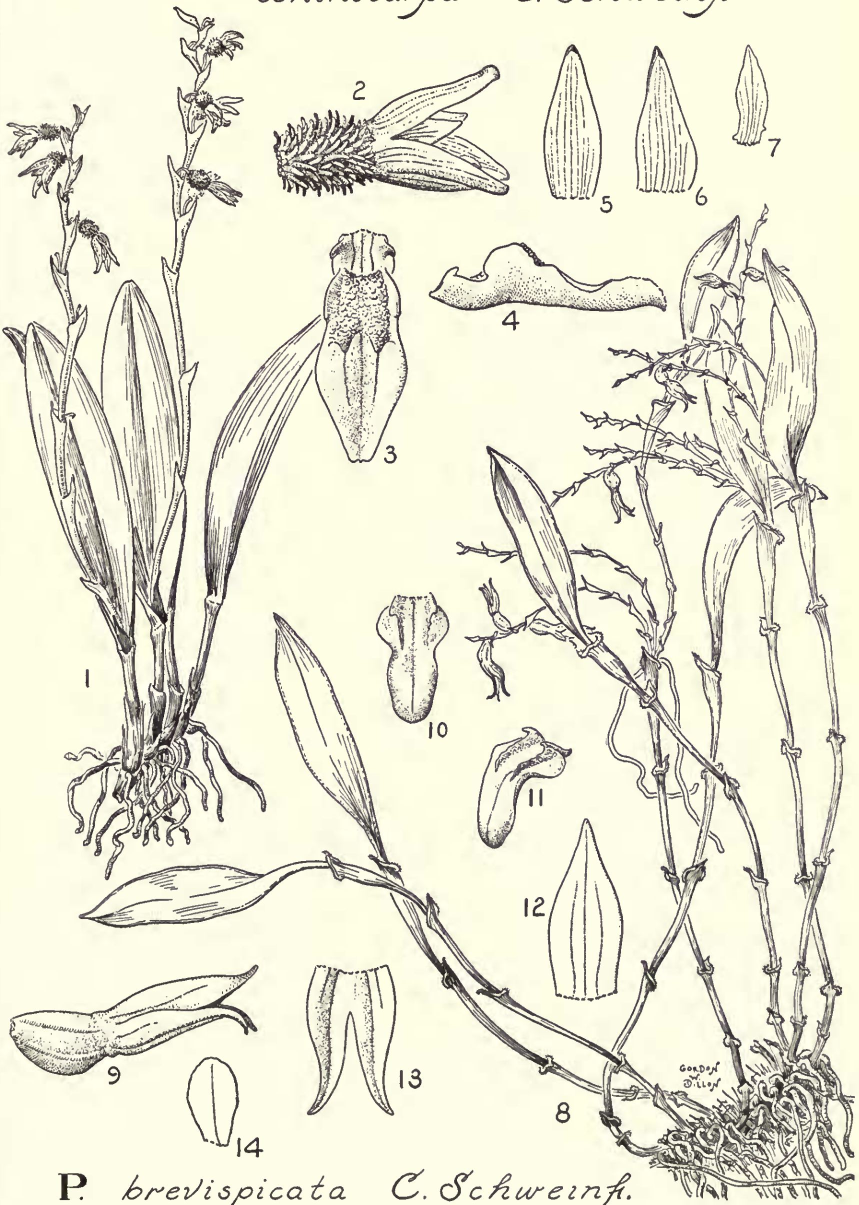
Plant rather large, epiphytic, up to about 30 cm. or more tall. Stems approximate, monophyllous, up to 15 cm. long, provided with 3 or 4 close, tubular sheaths. Leaf erect, short-petioled, up to 10 cm. long; lamina oblong-elliptic, minutely apiculate at the obtuse apex, cuneate at the base, up to 9 cm. long and 2.5 cm. wide. Inflorescences 1 or 2, much surpassing the leaf, densely many-flowered above, looser below, 17–18.7 cm. long, erect or spreading, arising from a small conduplicate spathe up to 11 mm. long. Flowers secund, yellow, medium-sized. Sepals similar, narrow, long-acuminate. Dorsal sepal linear-lanceolate, about 12 mm. long. Lateral sepals lanceolate, very oblique below, about as long as the dorsal sepal but slightly wider. Petals less than half as long as the sepals, obliquely oblong, rounded or subtruncate at the apex. Lip slightly larger than the petals, pandurate-oblong, about 5.6 mm. long; basal half subelliptic, traversed by a pair of high fleshy keels, the anterior half elliptic-ovate, bidentate at the apex. Column small, slender, arcuate, prolonged above into a ligulate wing, about 5.5 mm. long including the wing.

Cuzco: Prov. of Paucartambo, Pillahuata, 3200 meters, epiphytic in rain-forest, "ceja de montaña," *Vargas 3006.*

FIG. 51. *Pleurothallis echinocarpa* C. Schweinf. 1, plant; × ½. 2, flower and ovary from side; × 2. 3, lip from above, natural position; × 5. 4, lip from side, natural position; × 5. 5, dorsal sepal; × 2. 6, lateral sepal; × 2. 7, petal; × 2. *P. brevispicata* C. Schweinf. 8, plant; × 1. 9, flower and ovary from side; × 3. 10, lip from above, expanded; × 5. 11, lip from side, natural position; × 5. 12, dorsal sepal; × 3. 13, lateral sepals; × 3. 14, petal; × 3.

PLEUROTHALLIS

echinocarpa C. Schweinf.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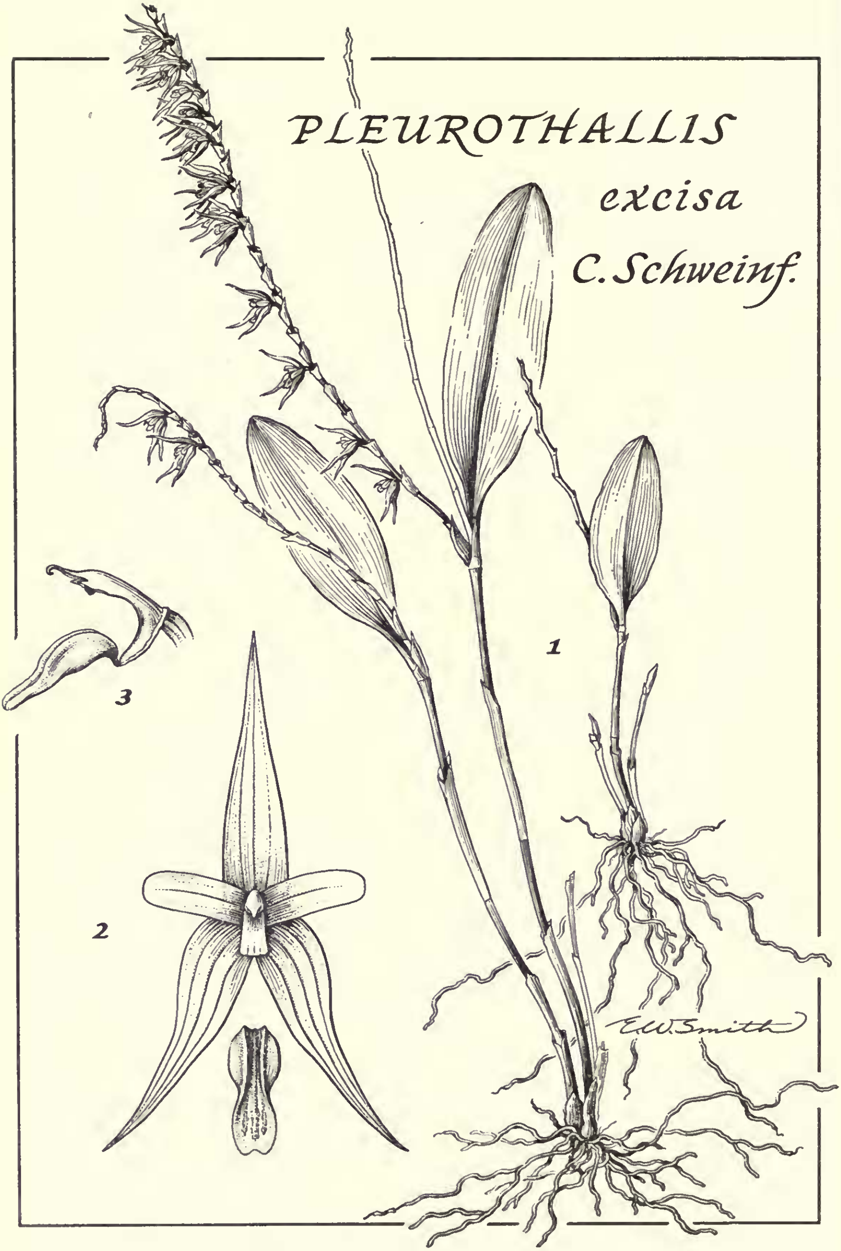
P. *brevispicata* C. Schweinf.


PLEUROTHALLIS
excisa
C. Schweinf.
1
2
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E. W. Smith

FIG. 52. *Pleurothallis excisa* C. Schweinf. 1, plants; × ½. 2, flower, expanded; × 3. 3, column and lip from side, natural position; × 3.

Pleurothallis fimbriata Lindl. Fol. Orch. Pleurothallis 17, no. 92. 1859; Cogn. Martius Fl. Bras. 3, pt. 4: 447. 1896. *Humboldtia fimbriata* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891.

Plant small, with a long-creeping rhizome. Secondary stems filiform, monophyllous, commonly 1–2 cm. distant, 4–6.2 cm. long, provided below with 2 close, tubular, evanescent sheaths. Leaf erect to horizontally spreading, narrowly elliptic to lanceolate-linear, acute to obtuse, sessile with a cuneate or rounded base, up to 4.1 cm. long and 9 mm. wide. Inflorescences abbreviated, axillary, 1-flowered, commonly 2 to 4, much shorter than the leaf. Flower small, bilabiate, red-brown, or purple and yellow. Dorsal sepal linear or linear-lanceolate, acute or acuminate, almost twice as long as the lateral sepals, up to 6.9 mm. long. Lateral sepals connate into a broadly ovate, concave, sharply bidentate lamina. Petals dwarf, about one third as long as the dorsal sepal, linear-lanceolate to elliptic-lanceolate, lightly oblique, acute, more or less minutely serrulate above. Lip somewhat larger than the petals, ovate-oblong when expanded, with semi-orbicular, incurved lobules below the middle, rounded and denticulate on the anterior margins, about 2.2 mm. long or less. Column shorter than the petals, laterally winged throughout, with the apex irregularly denticulate.

Loreto: Gamitanacocha, Río Mazán, 100–125 meters, epiphyte, on river bank, *Schunke 162.* Iquitos, about 100 meters, epiphyte in woods, *Killip & Smith 26998.* Same locality as the last, *Klug 10126.* Also Brazil (type) and British Guiana.

Pleurothallis fimbrilabia C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 50. 1953. *Restrepia ecuadorensis* Rolfe, Kew Bull. (1892) 138, not *Pleurothallis ecuadorensis* Schltr.

Plant rather small, epiphytic, with a creeping rhizome. Stems approximate, slender, about 4–10 cm. high, entirely or mostly concealed by several (up to 7) sheaths which are loose, tubular, scarious and finely purplish-maculate. Leaf solitary, erect, oblong-elliptic to oval, obtuse or acute, cuneate at the sessile base, up to 6 cm. long and 2.9 cm. wide. Inflorescences fascicled, 1 to several, 1-flowered, issuing from the uppermost sheath just below the leaf, with the pedicel about 5 cm. long. Flowers rather large, membranaceous, bilabiate. Dorsal sepal linear-lanceolate, about 2.2 cm. long, from an oblong-lanceolate, concave lower portion gradually narrowed to a filiform apex which is clavate-thickened near the tip. Lateral sepals connate into an elliptic-oblong, bidentate lamina which is about as long as the dorsal sepal but more than twice as wide. Petals similar to the dorsal sepal but much smaller, the lower portion sometimes with a more or less distinct appressed tooth. Lip about 9 mm. long, abruptly dilated from a small claw into a suborbicular basal portion provided on each side with a slender, setiform lobule, then contracted into a linear-oblong, sharply bidentate lamina which is erose-fimbriate and muriculate through the center. Column slender, clavate above, about half as long as the lip.

Huánuco: Muña, about 2100 meters, in dense forest, *Macbride 4018.* Ecuador (type of *Restrepia ecuadorensis*).

Pleurothallis flexuosa (Poepp. & Endl.) Lindl. Bot. Reg. 28, Misc. 69, no. 7. 1842; Fol. Orch. Pleurothallis 39, no. 239. 1859; Cogn. Martius Fl. Bras. 3, pt. 4: 491. 1896. *Specklinia flexuosa* Poepp. & Endl. Nov. Gen. ac Sp. 1: 52, t. 90. 1836. *Humboldtia flexuosa* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891. *Pleurothallis remotiflora* C. Schweinf. Am. Orch. Soc. Bull. 21: 108, t., 1952. Figure 53.

Plant small to medium-sized, epiphytic, caespitose, about 13–30 cm. high. Stems numerous, slender, more or less abbreviated, monophyllous, up to 5.1 cm. tall, enclosed by 2 or 3 close, tubular, imbricating, evanescent sheaths. Leaf erect, elliptic-linear, elliptic-oblong or elliptic-oblanceolate, acute and often minutely tridenticulate at the tip, gradually narrowed to a sessile base, 5–10.7 cm. long, up to 1.5 cm. wide. Inflorescences solitary or 2 to a stem, filiform, more or less exceeding the leaf, racemose above, variable in height, up to about 27 cm. long, suberect to arcuate; raceme remotely 3- to 14-flowered, suberect to arcuate or flexuous, with a strongly fractiflex rachis. Pedicels elongate and wide-spreading, up to 1.4 cm. long. Floral bracts minute, infundibuliform. Flowers small, campanulate, bilabiate, white finely spotted with brownish purple. Sepals long-pilose within on the upper half, membranaceous. Dorsal sepal more or less narrowly elliptic-lanceolate, acute or short-acuminate, up to about 9 mm. long. Lateral sepals connate into a broadly elliptic or suborbicular lamina which is sharply bidentate above, deeply concave below, nearly as long as the dorsal sepal and much broader. Petals much shorter than the sepals, obliquely cuneate-spatulate to semiorbicular-lunate from a short claw, broadly rounded or obtuse-angled at the apex. Lip subequaling the petals, arcuate-recurved with erect sides in natural position, about 2.7 mm. long when expanded, distinctly 3-lobed, with a conspicuous subquadrate claw; lateral lobes semiovate, with a truncate or subcordate base and adorned with a keel along the outer margin; mid-lobe small, ovate to oblong-obovate; disc with a large, fleshy, longitudinal callus through the lower half. Column about as long as the petals, with a large, trilobulate, denticulate wing on the upper portion, extended into a prominent foot.

Peru: Habitat not recorded, *Mathews 1911*.—Huánuco: Near Pampayaco (Pampayacu) and Cuchero (Cochero), epiphyte in forest, *Poeppig 1515* (type of *Specklinia flexuosa*).—San Martín: Tingo María, along the Huallaga, about 20 km. from Tingo María on the road to Huánuco, 625–1100 meters, *Allard 21958*. Also Ecuador (type of *P. remotiflora*) and Venezuela.

I am indebted to Mr. Leslie A. Garay of Toronto, Canada, for pointing out that the lip of *Specklinia flexuosa* (and consequently of *Pleurothallis flexuosa*) was incorrectly interpreted both by its original author and by subsequent workers. As verified by my own observation, I am convinced that this organ is inseparable from that of *Pleurothallis remotiflora*, and that the latter concept must be reduced to synonymy.

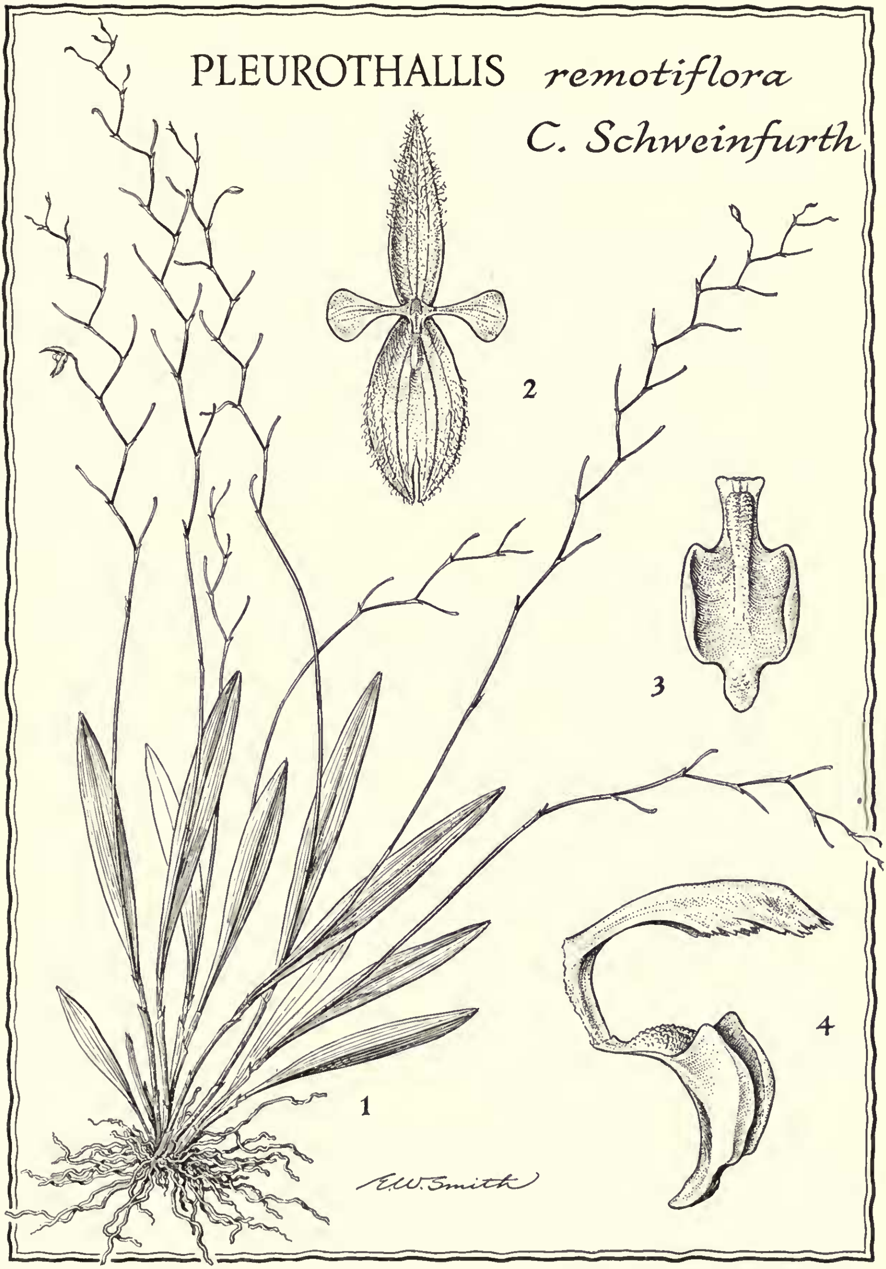
PLEUROTHALLIS remotiflora
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FIG. 53. *Pleurothallis remotiflora* C. Schweinf. = *P. flexuosa* (Poepp. & Endl.) Lindl. 1, plant; × ½. 2, flower, expanded, column and lip removed; × 3. 3, lip from above, expanded; × 10. 4, column and lip, oblique view; × 10.

Pleurothallis floribunda Poepp. & Endl. Nov. Gen. ac Sp. 1: 48, t. 84. 1836. *Pleurothallis macrophylla* Lindl. Bot. Reg. 28, Misc. 74, no. 44. 1842; Fol. Orch. Pleurothallis 3, no. 2. 1859, not HBK. *Pleurothallis macrophylla* Kunth ex Cogn. Martius Fl. Bras. 3, pt. 4: 396. 1896.

Plant large, 6 dm. or more high. Stems fascicled, very stout, unifoliate. Leaf erect, distinctly petioled; lamina elliptic-oblong, obtusely acute, cuneate-narrowed below, up to 30 cm. long and 8.4 cm. wide. Inflorescences fascicled, numerous, spreading, much shorter than the leaf, densely many-flowered nearly to the base, 8–15 cm. long, rising from a prominent, saccate spathe up to 2 cm. long. Flowers small, subdistichous, very short-pedicelled, erect-spreading, sulphur-colored. Sepals equally long, free, "oval" or ovate-oblong, acute, about 4–4.5 mm. long, membranaceous, 3-nerved, the lateral ones lightly oblique. Petals elliptic-oblong, obtuse to subacute, 1-nerved, about half as long as the sepals. Lip obovate or subelliptic, rounded in the middle, narrowed to both ends, lightly 3-lobed, triangular-acute, fleshy, about 2 mm. long and 1.6 mm. wide. Column about half as long as the lip.

Huánuco: Near Pampayaco (Pampayacu) and Cuchero (Cochero), on trees, *Poeppig 1599.*

I have examined the type specimen, which does not at all agree with the description of *P. macrophylla* HBK.

Pleurothallis fons florum Lindl. Fol. Orch. Pleurothallis 5, no. 15. 1859. *Humboldtia fons florum* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891.

Plant apparently large (only the upper portion present in the type). Stem stout, monophyllous. Leaf oval or oblong-elliptic, obtuse to rounded at the apex, subsessile, about 18 cm. long and 7.6 cm. wide. Inflorescences fascicled, numerous, racemose, much exceeding the leaf, densely many-flowered almost to the base, diffuse or flexuous, subtended by a prominent, conduplicate spathe about 3.5 cm. long. Flowers small, campanulate, about 5 mm. long. Dorsal sepal ovate-lanceolate, acute, concave. Lateral sepals similar, free. Petals distinctly shorter than the sepals, broadly oblong, bluntly apiculate at the broad oblique apex. Lip shorter than the petals, suborbicular-ovate, acute, obscurely 3-lobed above.

Huánuco: Near Cuchero (Cochero), *Poeppig s.n.* (type). Ecuador.

In the Ames Herbarium there is a photograph with floral analysis of this concept, from the Lindley Herbarium at Kew.

Pleurothallis frutex Schltr. Fedde Repert. 10: 454. 1912.

Plant large, epiphytic, up to 15 dm. tall, variable in all respects. Stems (presumably approximate) much branched with fascicles of short branches at the nodes, entirely concealed by close, tubular, evanescent sheaths, the branches being 11.5 cm. or less long. Leaves solitary at the apex of the branches, sessile, oblong-elliptic to narrowly oblong-lanceolate, subobtuse with a minutely tridenticulate apex, cuneate at the base, 4–8.7 cm. long, up to 1.5 (rarely 2) cm. wide. Inflorescences abbreviated, 1-flowered, few to numerous, clustered in the axils. Flowers medium-sized, campanulate, violet-red, yellow or yellowish-white. Dorsal sepal oblong-lanceolate, acute to acuminate, or "obtuse," concave below, 10–13 mm. long. Lateral sepals similar to the dorsal sepal but a little smaller, oblique below. Petals subequaling or slightly surpassing the sepals, narrowly lanceolate, from a more or less oblique oblong base gradually or rather abruptly contracted into a long, linear-caudate apex. Lip much smaller than the other segments, strongly arcuate-recurved below with incurved basal sides in natural position, oblong or ovate-oblong and 4–5.2 mm. long when expanded, denticulate above with a rounded apex, rather indistinctly auriculate-dilated near the base; disc with a pair of more or less distinct, erect, semielliptic calli below or near the middle. Column minute, stout, broadly winged throughout.

Cuzco: Prov. of Convención, "alturas de Pintobamba," 2500 meters, perianth yellow, *Vargas 3289*. Prov. of Paucartambo, Pillahuata, 2800 meters, perianth pale yellowish white, *Vargas 4954*. Bolivia (type).

Pleurothallis frutex Schltr. var. **robusta** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 91. 1951.

Plant stout, epiphytic, with few, fasciculate, strict branches which are up to 23 cm. long. Leaves similar to those of the type, elliptic-lanceolate to narrowly oblong-lanceolate, up to 17 cm. long and 2.3 cm. wide. Inflorescences axillary and glomerate as in the type, many-flowered. Flowers dark brown, with the segments recurved above. Dorsal sepal lanceolate or oblong-lanceolate, acuminate, about 1.5 cm. long. Lateral sepals similar to the dorsal sepal but a little shorter, oblique. Petals similar to those of the type, narrowly lanceolate, long-caudate above, distinctly longer than the sepals. Lip about 5 mm. long, similar to that of the type, but differing in having a relatively larger anterior portion and a pair of prominent teeth rather than obscure auriculate dilations below.

Cuzco: Prov. of Paucartambo, Pillahuata, 3400 meters, rain-forest in "ceja de montaña," *Vargas 3007*.

Pleurothallis gelida Lindl. Bot. Reg. 27, Misc. 91, no. 186. 1841; Fol. Orch. Pleurothallis 4, no. 12. 1859; Kränzl. Xen. Orch. 3: 116, t. 267, fig. II, 8–12. 1893. *Humboldtia gelida* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891.

Plant commonly large, up to 58 cm. high, with an abbreviated rhizome. Stems approximate, monophyllous, 5–35 cm. high, provided with 3 or 4 tubular sheaths of which the uppermost is largest and commonly separated. Leaf erect or erect-spreading, distinctly short-petioled, up to 25 cm. long; lamina oblong or oblong-elliptic to oval (rarely slightly broader below or above the middle), obtuse, cuneate below, 6–21 cm. long, up to 7.1 cm. wide. Inflorescences axillary, racemose, 1 to numerous, shorter than to somewhat exceeding the leaf, loosely many-flowered nearly to the base, up to 25 (rarely 35) cm. long. Flowers small for the plant, campanulate, greenish white to yellow. Sepals commonly more or less pilose within above. Dorsal sepal oblong-lanceolate, concave, obtuse to acute, up to 8 mm. long. Lateral sepals subequally long, oblong-lanceolate or elliptic-oblong, obtuse to acute, connate below, abruptly saccate at the base. Petals much shorter than the sepals, obliquely cuneate- or obovate-oblong (rarely elliptic-lanceolate), acute or truncate and often retuse at the apex. Lip arcuate-recurved in natural position, slightly shorter than the petals, cuneate or oblong-cuneate (sometimes pandurate) when expanded, retuse, truncate or broadly rounded at the apex, bicarinate in the middle, up to 2.5 mm. long. Column shorter than the expanded lip, arcuate, winged throughout, denticulate above.

Huánuco: Pampayaco (Pampayacu), *Kanehira 322.*

A wide-spread species extending from Florida through Honduras to Panama and from the West Indies (type) to Peru.

Pleurothallis genychila Schltr. Fedde Repert. Beih. 9:74. 1921; Mansf. Fedde Repert. Beih. 57: t. 114, nr. 446. 1929.

Plant large, erect, epiphytic, about 50 cm. high. Rhizome short, decumbent. Stems slender, monophyllous, 1–2 cm. distant, up to 35 cm. tall, with 3 close, distant, tubular sheaths. Leaf suberect or spreading, lanceolate-ligulate, subacuminate, subpetiolate narrowed below, 18–22 cm. long, about 3 cm. wide below the middle. Inflorescences racemose, fascicled, 3–5, racemose, less than half as long as the leaf, rather loosely many-flowered, secund. Flowers small, whitish with blood-red dots, glabrous. Dorsal sepal lanceolate, acuminate with an obtuse apex, 5 mm. long. Lateral sepals entirely connate into a broadly ovate, cucullate-concave lamina which is narrowed to an obtuse tip, as long as the dorsal sepal. Petals obliquely linear, acute, lightly sigmoid, subequaling the sepals in length. Lip small, from a subquadrate base abruptly dilated and bent down into a 3-lobed lamina; lateral lobes suborbicular-aliform, incurved in natural position; mid-lobe orbicular-ovate, "oval," apiculate, with crenulate margins; disc with 2 small, oblong calli at the base. Column short, footless.

Junín: Mountains of Yanenga, 2300–2400 meters, *Weberbauer 2125.*

Pleurothallis gigantea Lindl. Fol. Orch. Pleurothallis 28, no. 162. 1859. *Humboldtia gigantea* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891.

Plant stout, about 35 cm. high. Stems short, stout, monophyllous, about 4 cm. long, provided with 2 loose, coriaceous sheaths. Leaf oblong, obtuse, sessile at the cuneate base, up to 15 cm. long and 2.5 cm. wide. Inflorescence solitary, racemose, stout, about 30 cm. long, loosely several-flowered above the middle, with a fractiflex rachis. Floral bracts stout, prominent, equitant, incurved, carinate. Flowers apparently medium-sized. Dorsal sepal ovate-lanceolate or "ovate-oblong," acute, concave. Lateral sepals uppermost, oblong-lanceolate, connate up to the middle, wing-carinate, a little longer than the dorsal sepal. Petals about half as long as the sepals, elliptic-lanceolate, acute, provided with a pedicellate tubercle at the base in front. Lip slightly longer than the petals, from a short ligulate claw abruptly 3-lobed; lateral lobes erect, narrowly falcate-lanceolate; mid-lobe much larger, lanceolate-ovate from a short claw, obtuse, with a pair of oblong calli at the base of the lamina. Column about equaling the petals, winged throughout, clavate, with a short, concave foot. Ovary papillose-scabrous.

Peru: Habitat not recorded, *Mathews s.n.*

This description was prepared from a photograph of the type with floral analysis, from the Lindley Herbarium.

Pleurothallis graciliscapa C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 93, t. 28. 1951. Figure 54.

Plant slender, on trees or rocks, caespitose with a short, creeping rhizome (incomplete in our specimens), up to 15.5 cm. high. Stems very slender, about 4–13.2 cm. long, provided with 2 or 3 close, tubular, evanescent sheaths of which the uppermost one is longest. Leaf solitary, sessile, commonly horizontally spreading, ovate or oblong-ovate, deeply cordate at the base (when mature), acute or acuminate, 2.8–4 cm. long from the apex to the tip of a basal auricle, up to 1.7 cm. wide. Inflorescences abbreviated, 1-flowered, 1–5 to a stem. Flowers very small, bilabiate, pale yellow, glabrous. Dorsal sepal elliptic-ovate or oblong-ovate, concave, obtuse to subacute, 4–4.2 mm. long. Lateral sepals entirely connate into a broadly ovate, deeply concave lamina which is more or less shorter but slightly broader than the dorsal sepal. Petals linear, wide-spreading, lightly falcate-decurved, obtuse or subacute, with irregular or minutely erose margins, markedly shorter than the sepals. Lip oblong-ovate, very fleshy, minutely acute or apiculate, cordate at the base, minutely erose, about 2.1–2.6 mm. in greatest length and 1.4–1.6 mm. wide at the base. Column stout, abbreviated.

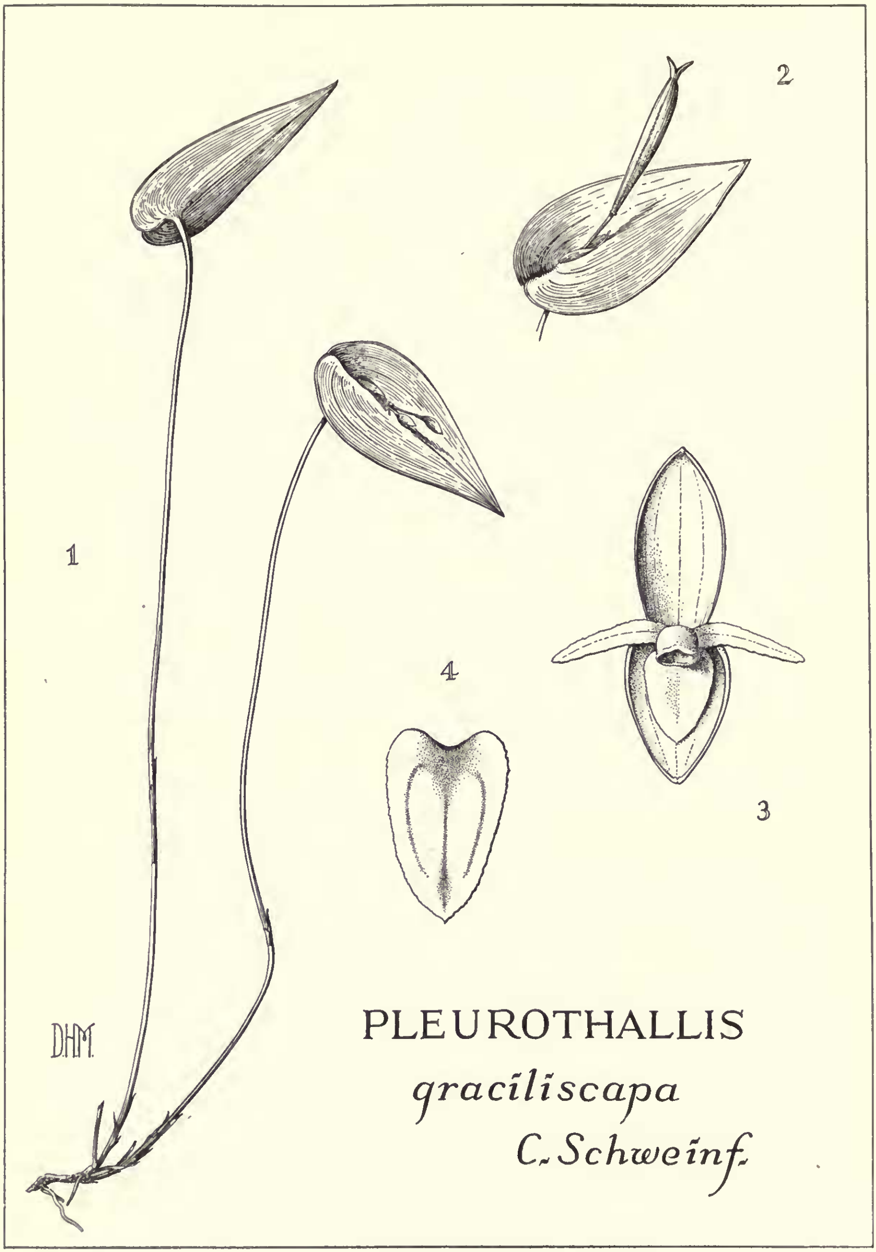
Huánuco: Tingo María, 670 meters, *Carpenter 103* (type).—San Martín: On cliffs on top of slope east of Tingo María, 625–1100 meters, *Allard 20820* (plant with short stems).

Pleurothallis grandiflora Lindl. Bot. Reg. 21, sub. t. 1797, no. 6. 1836; Fol. Orch. Pleurothallis 9, no. 39. 1859. *Humboldtia grandiflora* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891.

Plant large, about 36 cm. or less tall, caespitose. Stems numerous, rather slender, monophyllous, up to 26 cm. long, with 3 or 4 close, tubular, evanescent sheaths below. Leaf oblong-lanceolate or ovate-oblong, broadly rounded or shallowly cordate at the sessile base, more or less shortly and abruptly caudate above, erect or deflexed, up to 11.5 cm. long and 6.3 cm. wide. Inflorescences axillary, abbreviated, 1-flowered, 1 to several. Flower rather large, bilabiate, ringent, pubescent without. Dorsal sepal lanceolate or ovate-lanceolate, acute or short-acuminate, concave, about 2 cm. or less long. Lateral sepals entirely connate into a subequally long but broader, ovate, deeply concave lamina. Petals slightly more than half as long as the sepals, linear, curved, acute, more or less pubescent and ciliolate. Lip shorter than the petals, oblong-ovate, unguiculate, obtuse, ciliolate. Column abbreviated.

Amazonas, fide Schlechter, Fedde Repert. Beih. 9: 141. 1921.—Tacna: Valley of Lloa (Loa), about 2400 meters, epiphyte, *Hall s.n.* (type). Also Ecuador.

This description was chiefly compiled from a photograph of the type with floral analysis, from the Lindley Herbarium.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PLEUROTHALLIS
graciliscapa
C. Schweinf.

FIG. 54. *Pleurothallis graciliscapa* C. Schweinf. 1, plant; × 1. 2, leaf with fruit; × 1. 3, flower, expanded; × 6. 4, lip; × 10.

Pleurothallis Grobyi Batem. ex Lindl. Bot. Reg. 21: t. 1797. 1836; Hook. Bot. Mag. 65: t. 3682. 1839; Lindl. Fol. Orch. Pleurothallis 36, no. 221. 1859; Ames & Correll, Field. Bot. 26: 230. 1952. *Pleurothallis picta* Lindl. Bot. Reg. 21: sub. t. 1797, no. 15. 1836; Fol. Orch. Pleurothallis 36, no. 222. 1859. *Humboldtia Grobyi* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891. *Humboldtia picta* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant small, caespitose, variable, rarely up to 15.5 cm. tall. Stems numerous, abbreviated, crowded, monophyllous, up to 12 mm. high, concealed by several tubular, imbricating sheaths. Leaf very variable in shape and size, suborbicular-oval, spatulate or linear-oblanceolate, up to 6.3 (rarely 7) cm. long and 11 mm. wide, acute to rounded at the apex, tapering below into a more or less petioled base, marginate. Inflorescence solitary, exceeding the leaves (usually much so), very loosely racemose above, capillary, up to 12.5 (rarely 15) cm. long, few- to several-flowered. Flowers small, ringent, bilabiate, membranaceous, green, white, yellow, or orange, more or less marked with red. Dorsal sepal ovate to ovate-lanceolate, acute to long-acuminate, concave, up to 8 or 10 mm. long. Lateral sepals connate into an ovate or lanceolate, bidentate, acute or long-acuminate, concave lamina which is slightly longer than the dorsal sepal. Petals about a half to a fourth as long as the sepals, obliquely cuneate-oblanceolate, acute or subacute. Lip about equaling the petals or slightly longer, oblong, indistinctly bicarinate, rounded at the apex, rarely up to 3 mm. long, arcuate in natural position. Column about equaling the petals and lip, clavate, winged throughout, tridentate above, extended into a prominent foot.

Amazonas: Lower Napo River, about 100 meters, epiphyte in rain-forest, *Tessmann 3734*.—Cuzco: Habitat not recorded, *Bues s.n.*—Loreto: Río Huallaga Cañon, below Río Santo Domingo, about 1200 meters, in dry woods, *Macbride 4220*. Mishuyacu, near Iquitos, 100 meters, epiphyte in forest on river side, *Klug 1402, 10044*. Upper Marañon River at the mouth of the Santiago River, 160 meters, *Tessmann 4362*.—San Martín: San Roque, 1350–1500 meters, on trunk of petrified tree in forest, *Williams 7711*. A widely dispersed and very variable species extending from Mexico through Central America and the West Indies to Brazil and Peru.

Pleurothallis hemirhoda Lindl. & Paxt., Paxt. Flow. Gard. 3: 133, no. 612, fig. 299. 1852–3; Lindl. Fol. Orch. Pleurothallis 20, no. 109. 1859. *Restrepia vittata* Lindl. Journ. Hort. Soc. 3: 314, t. 1848, not *Pleurothallis vittata* Lindl. (1838). *Humboldtia hemirhoda* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891.

Plant large, from the thick rhizome to the apex of the erect leaf up to 63 cm. high. Stems approximate, monophyllous, slender, provided with 2 or 3 close, tubular-cylindric, maculate sheaths of which the uppermost is largest and separated, up to 50 cm. long. Leaf elliptic to oblong-elliptic, up to 13.7 cm. long and 3.8 cm. wide, obtuse to subacute, cuneate to subrounded at the sessile base. Inflorescences 1-flowered, abbreviated, solitary to several. Flower long-pedicelled, rather large, bilabiate, white and rose or cream-green and rose. Dorsal sepal lanceolate, long-acuminate, concave, about 2.6 cm. long. Lateral sepals entirely connate into an oblong-lanceolate, acuminate lamina which is deeply concave and about as long as the dorsal sepal but somewhat wider. Petals slender, as long as or slightly longer than the dorsal sepal, from an ovate-lanceolate, irregularly serrate-ciliate or "tomentose" base, tapering into a filiform upper portion which is slightly clavate at the apex. Lip somewhat shorter than the lamina of the lateral sepals, narrowly oblong in outline, deeply 3-lobed or auriculate at the base, sharply acute or "blunt," about 2 cm. long; lateral lobes very small, with obliquely lanceolate, porrect free portion; mid-lobe many times larger than the lateral lobes, oblanceolate-oblong, with the margins erose-ciliolate or "tomentose." Column minute.

San Martín: Zepelacio, near Moyobamba, about 1100 meters, in mountain forest, *Klug 3634.* Colombia (type).

Pleurothallis hirsutissima C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 94, t. 29. 1951. Figure 55.

Plant small, epiphytic, caespitose, with an abbreviated rhizome. Stems numerous, approximate, wide-spreading, monophyllous, slender, up to 4.5 cm. long, entirely concealed by 2 to 4 close, tubular, densely hirsute sheaths. Leaf solitary, commonly more or less erect, elliptic to oblong-elliptic, acute or obtuse, sessile, densely hirsute on both surfaces, up to 3.9 cm. long and 1.3 cm. wide. Inflorescences abbreviated, 1-flowered, fascicled, 1 to 5. Flowers small, pale green marked with purple. Sepals densely hirsute without. Dorsal sepal triangular-lanceolate, gradually narrowed into a purple filament which is clavate and fleshy-thickened at the apex, about 10.2 mm. long. Lateral sepals more or less connate, semielliptic and incurved, subacute, slightly shorter than the dorsal sepal, but about as wide where broadest. Petals similar to the dorsal sepal, obliquely lanceolate, narrowed into a purple filament which is fleshy-thickened and clavate at the apex, a little shorter than the lateral sepals. Lip pandurate, about 5 mm. long and half as wide above and below, acute; basal portion with a pair of obliquely ovate-triangular, incurved, sharply acute lobules; middle and anterior portion broadly obovate with lacerate-dentate margins; disc bicarinate below the middle, adorned with numerous dense papillae. Column small, arcuate, about 3.6 mm. high, dilated and irregularly dentate-lobulate at the apex.

Junín: Prov. of Tarma, Agua Dulce, 1800 meters, among mosses on tree in tall forest, *Woytkowski 35475.*

Pleurothallis inaequisepala C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 180, t. 18, figs. 1–7. 1942. Figure 56.

Plant small, slender, caespitose. Stems crowded, filiform, occasionally superposed or fascicled, entirely concealed by close, tubular, lepanthiform sheaths with a spreading hispid mouth, up to 6 cm. long (excluding the branches). Leaf solitary, obovate or subelliptic to oblanceolate, obtuse to rounded at the apex, more or less gradually narrowed into a short petiole, up to 3.1 cm. long and 7 mm. wide, marginate. Inflorescences abbreviated, commonly 2 to 4, racemose, very

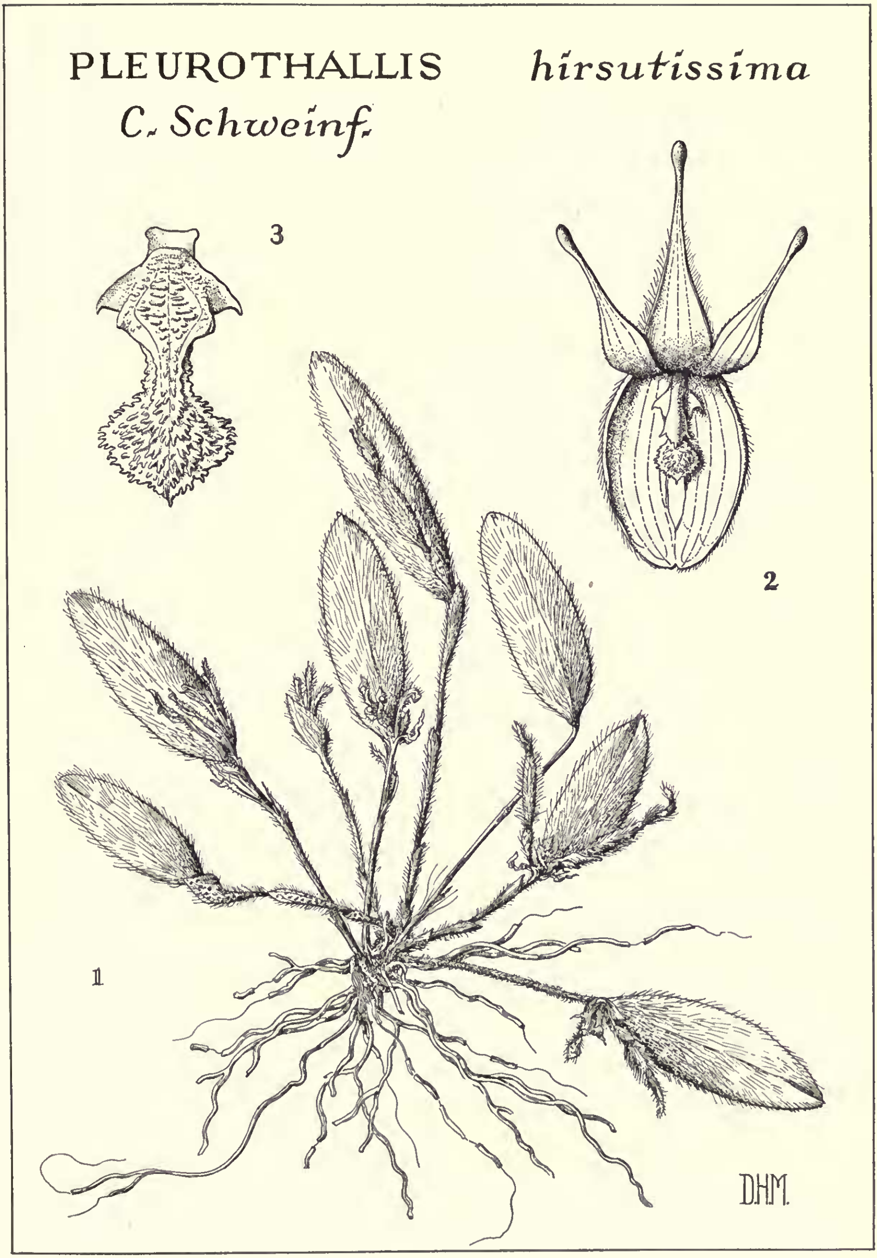
PLEUROTHALLIS hirsutissima
C. Schweinf.
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FIG. 55. *Pleurothallis hirsutissima* C. Schweinf. 1, plant; × 1. 2, flower, expanded; × 3. 3, lip; × 7½.

loosely 2- to 4-flowered, diffuse, much shorter than the leaf. Flowers small, membranaceous. Dorsal sepal strongly cucullate, ovate, rather abruptly caudate, about 5 mm. long. Lateral sepals arcuate-reflexed, linear-triangular, long-attenuate, shortly connate near the base, rather shorter than the dorsal sepal. Petals about half as long as the sepals, obliquely elliptic-lanceolate, lightly sigmoid, acute or acuminate. Lip simple, shorter than the petals, ovate or rhombic-ovate, broadly obtuse, broadly cuneate below, about 1.5 mm. long. Column minute, stout.

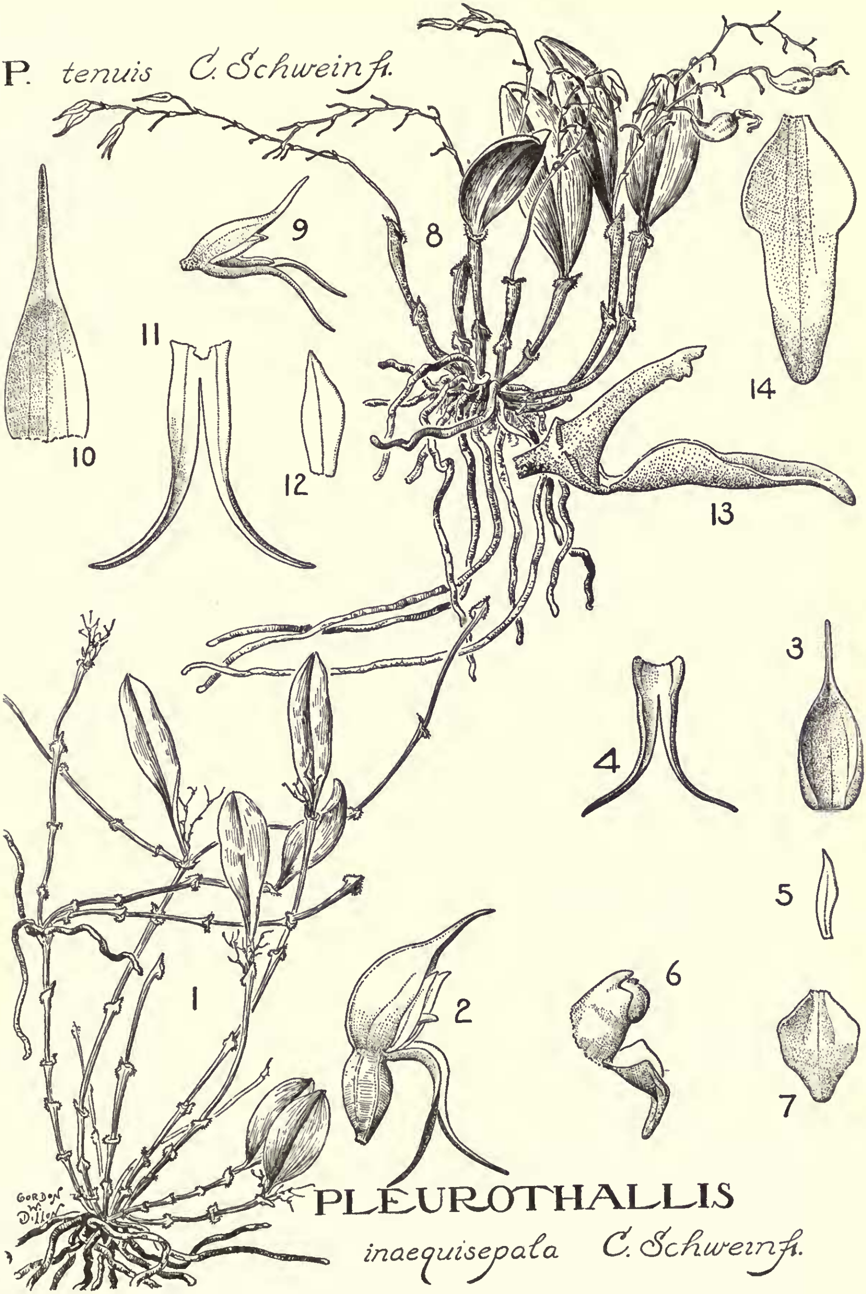
Cuzco: "Valle de Santa Ana, alturas del Chaco," 3666 meters, *Herrera 2125* (Bues coll.).

Pleurothallis juninensis Schltr. Fedde Repert. Beih. 9: 76. 1921; Mansf. Fedde Repert. Beih. 57: t. 114, nr. 449. 1929.

Plant variable, both vegetatively and florally, small to rather large, caespitose. Stems densely clustered, monophyllous, slender, provided with 2 or 3 long, close, tubular sheaths of which the uppermost is elongate and separated, up to 28.5 cm. high. Leaf erect, spreading or reflexed, oblong-ovate to lanceolate-ovate, acuminate or long-acuminate, more or less deeply cordate at the sessile base, up to 9.7 cm. long (including the basal auricles) and 4.3 cm. wide below the middle. Inflorescences 1-flowered, abbreviated, one to several. Flower small, bilabiate, pale yellow, greenish or salmon-pink. Dorsal sepal linear-oblong or linear-lanceolate, acute or subacute, up to 9.6 mm. long. Lateral sepals connate into a concave, ovate-lanceolate, acute lamina which is slightly shorter but much broader than the dorsal sepal. Petals linear, acute, somewhat falcate-porrect, more or less distinctly finely erose, somewhat shorter than the sepals. Lip oblong or ovate-oblong, shorter than the petals, sharply deflexed at the cordate base, abruptly acute or apiculate, with the margins minutely erose and the disc more or less scabrous, the mid-nerve near the apex fleshy-thickened beneath, up to 5 mm. long in greatest length. Column minute, stout.

Junín: Above Huacapistana on the road to Palca, 1700–1900 meters, *Weberbauer 1974* (type). Chanchamayo Valley, 1600 meters, *Schunke 1709, 1764*. Pichis Trail, Eneñas, 1600–1900 meters, epiphyte in dense forest, *Killip & Smith 25656, 25663*. San Ramón, 900–1300 meters, epiphyte in dry woods, *Killip & Smith 24761*. Schunke Hacienda, above San Ramón, 1400–1700 meters, epiphyte in dense forest, *Killip & Smith 24859*.—Loreto: Pumayacu, between Balsapuerto and Moyobamba, 600–1200 meters, epiphyte in forest, *Klug 0.14*.

FIG. 56. *Pleurothallis inaequisepala* C. Schweinf. 1, plant; × 1. 2, flower and ovary from side, natural position; × 5. 3, dorsal sepal; × 5. 4, lateral sepals, natural position; × 5. 5, petal; × 5. 6, column and lip from side; × 10. 7, lip, expanded; × 10. *P. tenuis* C. Schweinf. 8, plant; × 1. 9, flower from side; × 2½. 10, dorsal sepal; × 5. 11, lateral sepals, natural position; × 5. 12, petal; × 5. 13, column and lip from side; × 10. 14, lip from above, expanded; × 10.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Gordon W. Dillon

P. *tenuis* C. Schweinf.

PLEUROTHALLIS *inaequisepala* C. Schweinf.

Pleurothallis juninensis Schltr. var. **angustifolia** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 96. 1951.

Plant small to medium-sized, caespitose. Stems 4.5–15 cm. long. Leaf solitary, lanceolate-oblong to linear, more or less narrowed above, cuneate, rounded or subcordate at the base, up to 8.5 cm. long and 1.5 cm. wide. Inflorescences similar to those of the type. Dorsal sepal oblong-ovate, acute, about 6 mm. or less long. Lateral sepals connate into a lanceolate-ovate lamina which is slightly shorter but broader than the dorsal sepal. Petals and lip similar to those of the type.

Huánuco: Yanano, about 1800 meters, epiphyte on mossy tree, *Macbride 3847* (type).—Junín: Chanchamayo Valley, 1200 meters, *Schunke 1123.*

Pleurothallis juninensis Schltr. var. **subaequisepala** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 52. 1953.

Plant large, caespitose. Stems 14–27.5 cm. long. Leaf solitary, ovate-oblong or elliptic-oblong, acute or short-acuminate, shortly cordate at the base, 10–11 cm. long, up to 3.5 cm. wide. Flowers bilabiate, similar to those of *P. juninensis* var. *angustifolia* but larger, brown or reddish. Dorsal sepal oblong-ovate or ovate-lanceolate, acute or acuminate, about 9.5–16 mm. long. Lateral sepals connate into an oblong-ovate or oblong-lanceolate lamina, which is about as long as the dorsal sepal but slightly narrower. Petals and lip similar to those of the type.

Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayocc, 2200 meters, epiphyte in dense forest, *Vargas 2561* (type). Prov. of Paucartambo, "Pillahuata," Cerro de Cusilluyoc, above Río Pillahuata, 2300–2400 meters, epiphyte in forest, *Pennell 14005.*

Pleurothallis lanceolata Lindl. Gen. & Sp. Orch. 5. 1830; Fol. Orch. Pleurothallis 6, no. 24. 1859. *Humboldtia lanceolata* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891. (*Humboldtia lanceolata* Ruíz & Pav. Syst. Veg. 237. 1798, and *Stelis lanceolata* Pers. Syn. Pl. 2: 524, no. 12. 1807, cited by Lindley in 1830 and by others as synonyms of *Pleurothallis lanceolata*, are referable to *Stelis disticha* Poepp. & Endl., fide Lindley 1842; vide remarks about *Stelis lanceolata* supra.)

Plant robust, variable, about 45–60 cm. high. Stem monophyllous, about 24–44 cm. high, provided with about 3 tubular, membranaceous, evanescent sheaths. Leaf erect, distinctly short-petioled; lamina elliptic to oblong-elliptic, acute, narrowed or broadly cuneate at the base, 13–19.5 cm. long, up to 6 cm. wide; petiole up to 1.9 cm. long. Inflorescence solitary, racemose, loosely few- to several-flowered, shorter than or slightly surpassing the leaf, arising from a conspicuous, conduplicate, coriaceous spathe up to 8 cm. long. Flowers rather large. Sepals about 2 cm. long. Dorsal sepal narrowly lanceolate, long-attenuate above, concave. Lateral sepals connate into a subequally long, concave, lanceolate, acuminate lamina which is bidentate above. Petals somewhat shorter than the sepals, long attenuate-caudate from a lanceolate base. Lip nearly as long as the petals, lanceolate, long-acuminate, navicular. Column dwarf, arcuate, dilated toward the base.

Peru: Habitat not recorded, *Pavón* (type).—Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 141. 1921. Also Venezuela.

Pleurothallis lancilabris (Reichb. f.) Schltr. var. **oxyglossa** (Schltr.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 6: 200. 1938. *Pleurothallis oxyglossa* Schltr. Fedde Repert. 10: 354. 1912. *Pleurothallis Schulzeana* Schltr. Beih. Bot. Centralbl. 36, Abt. 2: 396. 1918.

Plant very small, rarely up to 8 cm. tall. Rhizome abbreviated. Stems crowded, monophyllous, very short, rarely up to 6 mm. high, invested by a tubular, membranaceous sheath. Leaf linear-oblanceolate to cuneate-spatulate, rarely up to 3.5 cm. long and 4 mm. wide, minutely tridenticulate at the acute or rounded apex, gradually narrowed to a more or less distinctly petioled base. Inflorescences capillary, solitary, much surpassing the leaf, loosely few- to many-flowered, with a fractiflex rachis and rather long spreading pedicels. Flowers small, but large for the plant, with spreading segments, reddish green, yellow, reddish yellow or pale purple-red. Dorsal sepal narrowly lanceolate, long-acuminate, up to about 5 mm. long. Lateral sepals obliquely lanceolate or ovate-lanceolate, long-acuminate, a little shorter than the dorsal sepal. Petals obliquely linear-lanceolate, falcate, long-acuminate, slightly shorter and narrower than the sepals. Lip narrowly triangular-lanceolate or ovate-lanceolate, acuminate or long-acuminate, sessile, about half as long as the sepals or more, up to 3 mm. long. Column minute, broadly bialate.

Cuzco: Prov. of Paucartambo, S. Pedro to S. Isabel, 1350 meters, on old tree trunks in stony tract, *Vargas 6777*. Prov. of Urubamba, Salapunco, Km. 84, 2400 meters, on mossy rocks, *Vargas 5987*.—Huánuco: Panao, about 2700 meters, ledges and crevices of rock cliffs, *Macbride 3631*. Also Guatemala (type of *P. oxyglossa*) and Costa Rica (type of *P. Schulzeana*).

Pleurothallis linearis Lindl. Bot. Reg. 28, Misc. 82, no. 98. 1842; Fol. Orch. Pleurothallis 14, no. 72. 1859. *Specklinia linearis* Lindl. Gen. & Sp. Orch. 9, no. 5. 1830 (excl. synon.).

Plant small, with a creeping rhizome. Stems slender, more or less approximate, lightly ancipitous above, about 5–7.6 cm. long, provided below with 2 or 3 close, tubular sheaths. Leaf solitary, erect-spreading, elliptic-oblong to linear-oblong, obtuse with a minutely tridenticulate tip, cuneate at the sessile or subsessile base, 2.5–3.2 cm. long, up to 6 mm. wide. Inflorescence apparently solitary, nearly equaling the leaf or shorter, diffuse, very loosely about 2- to 5-flowered.

This is an obscure species perhaps referable to *P. pruinosa* Lindl. The above description and measurements were furnished chiefly by a photograph of a Pavón collection designated *Pleurothallis linearis* (in the handwriting of Reichenbach f.) from the Delessert Herbarium, as well as from actual (sterile) specimens from the Reichenbach Herbarium. Since the definition of this concept is uncertain it has not been included in the key.

Pleurothallis longiserpens C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 183, t. 20. 1942. Figure 57.

Plant long-creeping, medium-sized, funiform. Rhizome slender, concealed by a bundle of fleshy roots. Secondary stems short, slender, appressed to the rhizome, monophyllous, rarely up to 5 cm. long, concealed by tubular, evanescent sheaths. Leaf ascending, linear-oblanceolate, acute, gradually narrowed to a sessile base, up to 8 cm. long and 8 mm. wide. Inflorescences 1 to several, fascicled below the apex of the stem, abbreviated, 1- or 2-flowered. Flower rather large, ringent, reddish brown. Dorsal sepal strongly concave, oblong-elliptic below, abruptly narrowed to a subequally long cauda, about 17–21 mm. long. Lateral sepals free nearly to the base, obliquely linear-lanceolate, gradually caudate-acuminate, about as long as the dorsal sepal but much narrower. Petals much shorter, about a fourth as long as the sepals, spatulate-obovate, broadly rounded above with irregular margins. Lip pandurate or 3-lobed, slightly larger than the petals, up to 6 mm. long; basal half with semiorbicular, erect sides or lobes; anterior half nearly flat, ovate-suborbicular, prominently mucronate, irregularly fimbriate-lacerate, densely papillose. Column abbreviated, dilated above, about half as long as the petals, with a stout foot which terminates in a porrect, incurved horn.

Ayacucho: Prov. of Huanta, mountains northeast of Huanta, 3100–3200 meters, on rocks, *Weberbauer 7510.*

Pleurothallis macroblepharis Reichb. f. Gard. Chron. n.s. 2: 772. 1874; Linnaea 41: 15. 1876. *Masdevallia culex* hort. ex Gard. Chron. ser. 3, 3: 488. 1888. *Masdevallia pulex* hort. ex Gard. Chron. ser. 3, 3: 488. 1888.

Plant small, caespitose, about 10 cm. high. Stems abbreviated, monophyllous. Leaf cuneate-oblong or cuneate-obovate, narrowed to a short petiole, minutely tridenticulate at the broadly obtuse apex, apparently about 3 cm. long. Inflorescence capillary, about 9 cm. tall, racemose above, distantly few- (5-) flowered. Flowers small, pale straw-color, dotted with dark purple or brown. Dorsal sepal triangular-ovate, aristate or caudate, concave, sparingly ciliate. Lateral sepals similar, oblique, connate near the base. Petals more or less shorter than the sepals, lanceolate and long-ciliate below, long-aristate above. Lip about half as long as the sepals, shortly clawed, obovate-oblong, broadly rounded in front, densely ciliate-fimbriate above, with a pair of abrupt, obtuse-angled auricles just above the claw. Column clavate, serrulate at the dilated apex, about as long as the lip.

Northern Peru(?): *Roezl s.n.*

PLEUROTHALLIS
longiserpens C. Schweinf.

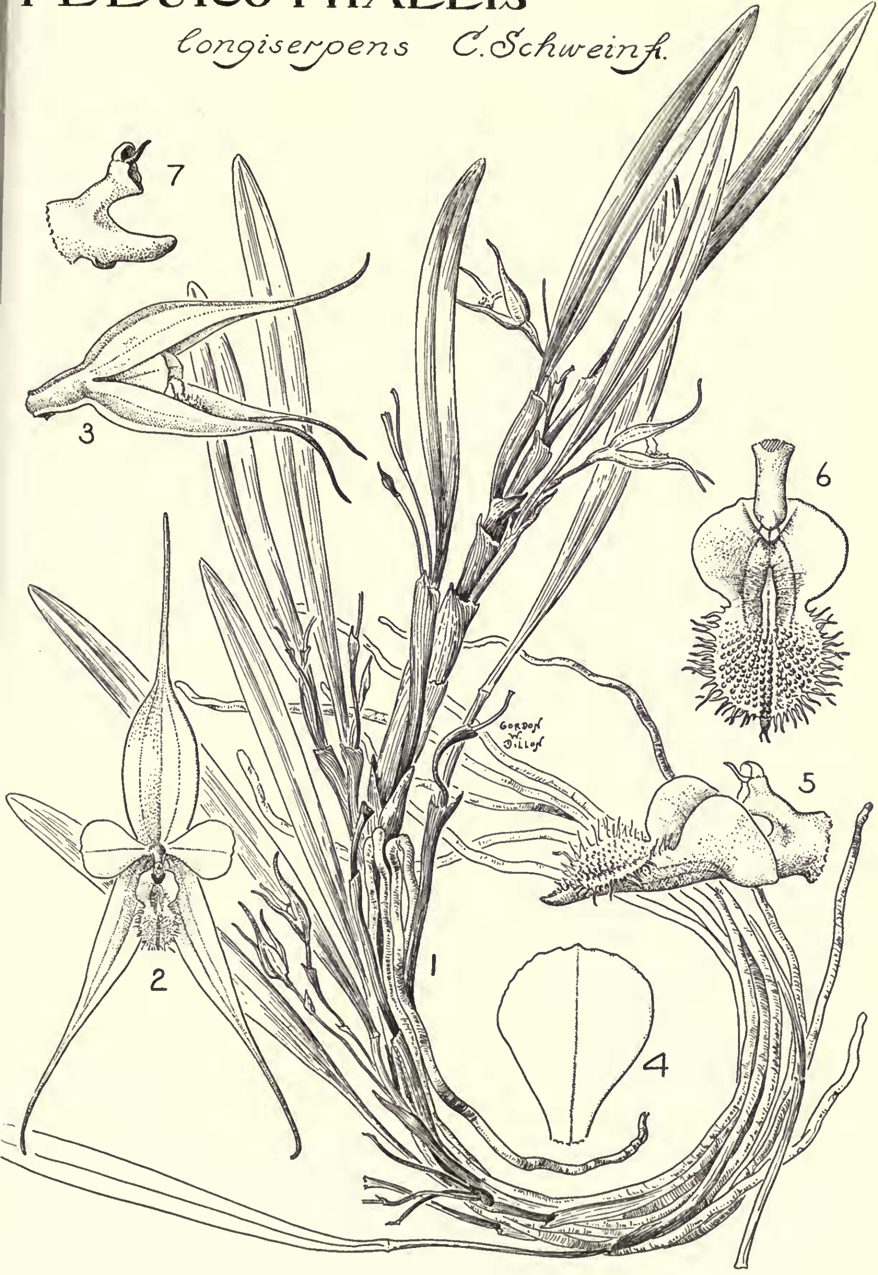

FIG. 57. *Pleurothallis longiserpens* C. Schweinf. 1, plant; × 1. 2, flower from above, expanded; × 2. 3, flower and ovary from side, natural position; × 2. 4, petal; × 5. 5, lip and column from side, natural position; × 5. 6, lip from above, expanded; × 5. 7, column with anterior horn from side; × 5.

This description was compiled by reference to drawings of this species, from the Reichenbach Herbarium.

Pleurothallis macrorhiza Lindl. Hook. Journ. Bot. 1: 9. 1834; Fol. Orch. Pleurothallis 43, no. 273. 1859; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 176. 1944. *Humboldtia macrorhiza* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891. *Pleurothallis rhizomatosa* Schltr. Fedde Repert. Beih. 8: 62. 1921; Mansf. Fedde Repert. Beih. 57: t. 84, nr. 327. 1929.

Plant long-creeping, medium-sized, funiform. Rhizome concealed by an appressed bundle of long, stout roots. Secondary stems appressed to the rhizome below, short, slender, monophyllous, up to 3.2 cm. long, concealed by loose evanescent sheaths. Leaf linear-oblanceolate or oblong-oblanceolate, acute, gradually tapering to a sessile, petiole-like base, up to 7.8 cm. long and 12 mm. wide. Inflorescences 1–3 (rarely 4), arising in a cluster below the apex of the stem, loosely racemose, 1- to 4-flowered, up to 7 cm. long. Flowers medium-sized, pale yellow or brownish yellow and brown. Dorsal sepal lanceolate or oblong-lanceolate ("ovate-oblong"), acute, concave, up to 1.35 cm. long. Lateral sepals connate into an ovate-oblong, bidentate, concave lamina which is subequally long with the dorsal sepal. Petals much smaller, about a third as long as the sepals or a little longer, spatulate to cuneate, rounded and often with a more or less prominent apicule at the apex. Lip almost twice as long as the petals, ovate or rhombic-ovate, rounded to subacute at the apex, with a more or less prominent elliptical depression in the middle, more or less scabrous toward the apex, about 8 mm. or less long. Column slender, arcuate, about equaling the petals or a little shorter, slightly dilated above and below, with a short foot.

Amazonas, fide Schlechter, Fedde Repert. Beih. 9: 141. 1921.—Cajamarca: Prov. of Chota, Pass south of Conchan, 2500 meters, terrestrial in humus, *Stork & Horton 10059*.—Huánuco: Chasqui, about 3200 meters, "half trailing in patches on shady rocky ledges," *Macbride & Featherstone 2455*. Chinchapalca, 5 miles above Mito, about 2900 meters, on shady rocky cliff, *Macbride & Featherstone 1602*. Ecuador (type of both concepts).

Pleurothallis magnipetala C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 97, t. 30. 1951. Figure 58.

Plant small, slender, subcaespitose, up to 13 cm. high. Rhizome abbreviated, creeping. Stems more or less approximate, filiform, unifoliate, about 12 cm. or less long, with 2 close, tubular sheaths, the shorter one at the base and the longer one below the middle. Leaf narrowly ovate or lanceolate-ovate, deeply cordate at the base, gradually narrowed above to an obtuse or subacute, minutely tridenticulate tip, wide-spreading or reflexed, up to 5.1 cm. long from the apex to the tip of a basal auricle and 1.8 cm. wide. Inflorescences axillary, abbreviated, 1-flowered, numerous. Flower very small, bilabiate, orange-yellow or dull yellow. Dorsal sepal oblong-ovate, subacute, concave, about 4.3 mm. long and 2 mm.

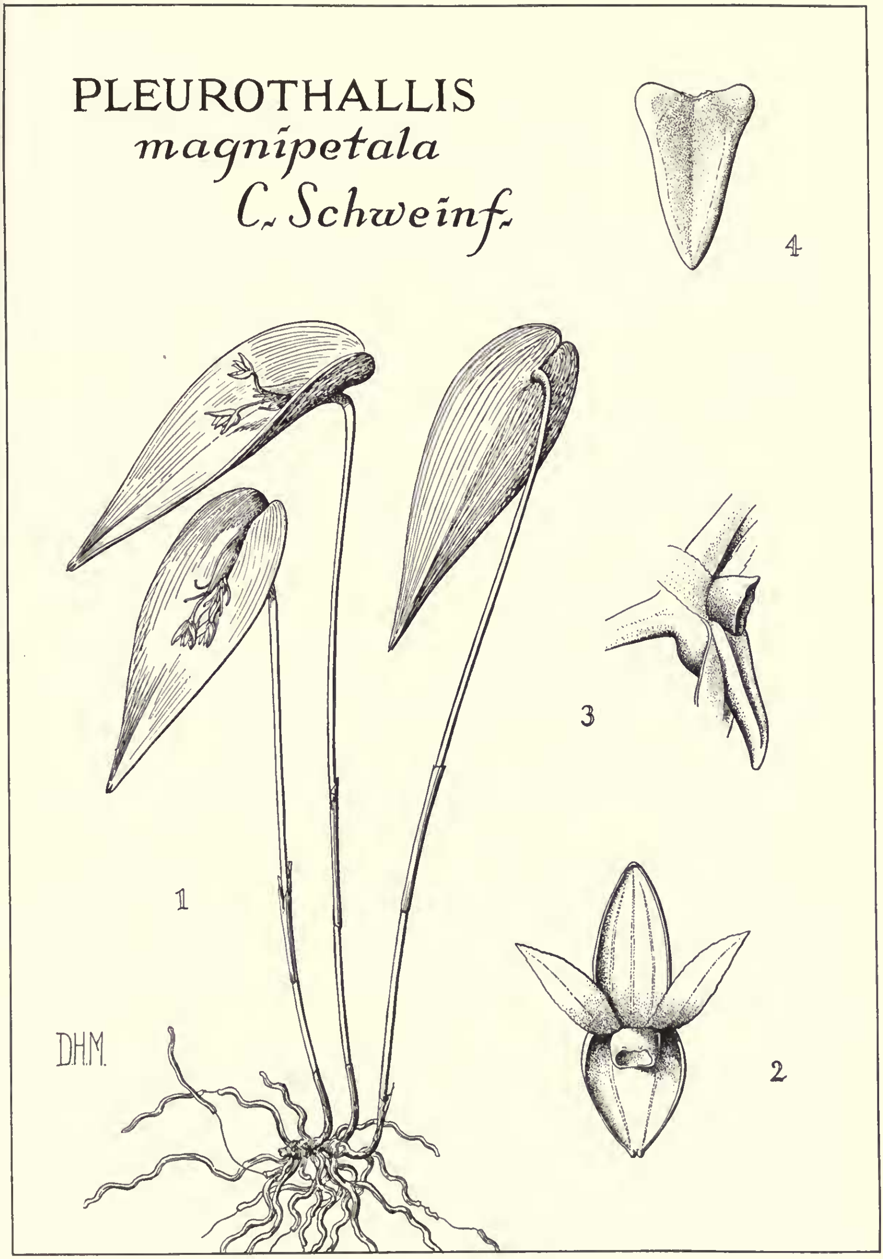
PLEUROTHALLIS
magnipetala
C. Schweinf.
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FIG. 58. *Pleurothallis magnipetala* C. Schweinf. 1, plant; × 1. 2, flower, expanded; × 5. 3, column and lip from side; × 10. 4, lip; × 10.

wide. Lateral sepals connate into a broadly ovate, concave, minutely bidentate lamina which is distinctly shorter and broader than the dorsal sepal. Petals large for the alliance, oblong-lanceolate or linear-elliptic, acute, about as long as the lateral sepals but much narrower, entire or nearly so. Lip fleshy, narrowly ovate-triangular, shallowly cordate at the base, acute or subacute, about 2.5 mm. in greatest length and 1.5 mm. wide below. Column very short and stout.

Cuzco: Prov. of Quispicanchis, Hda. Ttío Marcapata, 2000 meters, in stony or rocky open places, *Vargas 3128* (type). Prov. of Quispicanchis, Cadena, 1020 meters, epiphyte, *Vargas 6221*. Prov. of Paucartambo, S. Pedro to S. Isabel, 1350 meters, on old tree trunks, *Vargas 6784*.

Pleurothallis misera Lindl. Fol. Orch. Pleurothallis 36, no. 215. 1859. *Humboldtia misera* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant small and slender, about 17 cm. or more high, caespitose. Stems short, monophyllous, about 2 cm. or less long, clothed with 2 loose, tubular, evanescent sheaths. Leaf erect, oblanceolate or oblong-spatulate, acute or subobtuse, gradually narrowed to a petioled base, up to 5.9 cm. long and 1 cm. wide. Inflorescence filiform, far surpassing the leaf, solitary, loosely racemose above, few- to many-flowered, about 17 cm. long, arising from the stem just above the base. Flowers very small. Sepals ovate, sharply acute, about 2.8 mm. long, dorsally carinate. Petals subequally long, ovate-lanceolate, acuminate. Lip oblong-ovate or ovate-lanceolate, acute or acuminate, fleshy, slightly shorter than the sepals and petals, about 2.1 mm. long. Column minute, dilated and trilobulate above.

Amazonas: Chachapoyas, on tree trunks, *Mathews 3197*.

I have examined typical material of this species deposited in the Gray Herbarium.

Pleurothallis muricata Schltr. Fedde Repert. 10: 293. 1912. *Pleurothallis sororia* Schltr. Fedde Repert. 10: 294. 1912. *Kraenzlinella rufescens* Rolfe, Kew Bull. (1916) 77. *Pleurothallis rufescens* Schltr. Fedde Repert. Beih. 9: 142. 1921. *Pleurothallis diuturna* Schltr. Fedde Repert. Beih. 17: 19. 1922.

Plant medium-sized to large, up to 48 cm. tall, stout or slender, extremely variable. Rhizome abbreviated or shortly creeping. Stems crowded, short, monophyllous, up to 7 cm. long, more or less concealed by 2 loose tubular, imbricating, evanescent sheaths. Leaf erect or erect-spreading, varying from oblong-linear to oblong or elliptic-oblong, (sometimes slightly broader above the middle), acute to obtuse or rounded at the apex, more or less gradually cuneate at the base which is commonly sessile but very rarely short-petioled, 5–17 cm. long, up to 4.3 cm. wide. Inflorescence solitary, racemose above, loosely few- to many-flowered, more or less surpassing the leaf, up to 47.7 cm. long, erect to arcuate, with a more or less fructiflex rachis and prominent equitant floral bracts which are often falcate-incurved. Flowers medium-sized, ringent, reddish brown and maroon marked with green-yellow, yellow or red and white. Dorsal sepal ovate-oblong or elliptic-oblong, subacute to acuminate, concave, dorsally lightly carinate above, about 9–19 mm. long. Lateral sepals slightly longer, oblong-lanceolate, lightly falcate, acute, prominently carinate dorsally. Petals linear to narrowly elliptic-lanceolate, acute, more or less oblique especially below, with the anterior margin decurrent on the lower part of the column where minutely auriculate, more than half as long as the dorsal sepal. Lip almost equaling the petals, arcuate or lightly sigmoid (when viewed from the side), fleshy, oblong-lanceolate in outline, acute or obtuse, with a pair of minute porrect, falcate, serrate lobules near the base and a more or less distinct pair of semiobovate, incurved, serrate lobules just below the middle, the lamina being densely papillose, about 7–9 mm. long. Column a little shorter than the petals, arcuate, slightly dilated and denticulate above, with a prominent foot. Ovary conspicuously muricate.

Peru: Habitat not recorded, *Forget s.n.* (type of *Kraenzlinella rufescens*).—Cuzco: Prov. of Quispicanchis, Cadena, 1020 meters, epiphyte, *Vargas 6217*.—Junín: Chanchamayo Valley, 1800 meters, *Schunke s.n., 555*. Pichis Trail, 1400 meters, epiphyte in dense forest, *Killip & Smith 25437*. A widespread species, extending from Mexico and Guatemala (*Pleurothallis muricata*) to Panama (*P. diuturna*) and Peru.

Pleurothallis nigro-hirsuta Kränzl. Fedde Repert. 1: 91. 1905.

Plant medium-sized, about 30 cm. high, apparently caespitose. Stems crowded, monophyllous, slender, provided with 2 or 3 close, tubular sheaths, up to 10 cm. high. Leaf short-petioled; lamina elliptic to oblong-elliptic ("oblong"), rounded at the apex, cuneate below, up to 7 cm. long and 2.5 cm. wide; petiole about 1 cm. long. Inflorescence solitary, much surpassing the leaf, rather loosely racemose and many-flowered above, about 28 cm. or less long, suberect or lax. Floral bracts and pedicellate ovaries shortly black-hirsute. Flowers simultaneous, rather large, ringent, green. Sepals lanceolate, attenuate-acuminate, about 1–1.3 cm. long; lateral sepals shortly connate near the base. Petals cuneate-obovate, triangular-obtuse, with a thickened central line, about a third as long as the sepals or less. Lip rather similar to the petals but a little broader, cuneate-obovate, minutely auriculate on each side at the base, rounded above, disc with 3 lines of which the median is short and the lateral ones extend to the apex. Column short, split into 2 narrow teeth above.

Junín: Prov. of Tarma ("Terma"), mountains west of Huacapistana, 2600–3000 meters, in open humid forest mingled with shrubs, *Weberbauer 2098*.

A photograph of the type in the Ames Herbarium furnished some emendations to the original description.

Pleurothallis obovata (Lindl.) Lindl. Bot. Reg. 28, Misc. 75, no. 51. 1842; Fol. Orch. Pleurothallis 22, no. 125. 1859; Kränzl. Xen. Orch. 3: 87, t. 247, fig. II, 7–11. 1892; Cogn. Urban Symb. Antill. 6: 419. 1909. *Specklinia obovata* Lindl. Bot. Reg. 25, Misc. 86, no. 137.

1839. *Pleurothallis octomeriaeformis* Reichb. f. Bonpl. 2: 25. 1854. *Pleurothallis albida* Lindl. Ann. & Mag. Nat. Hist. ser. 3, I: 327. 1858. *Humboldtia obovata* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant small, up to 15 cm. or more tall, with a creeping rhizome. Secondary stems more or less separated, slender, monophyllous, mostly concealed by 3 or 4 tubular, membranaceous, evanescent sheaths, more or less decumbent at the base, up to 10 cm. long. Leaf erect, oblanceolate-elliptic to obovate-oblong, obtuse to rounded (rarely acute) at the apex, gradually narrowed below to a short or indistinct petiole, up to 9 cm. long and 2 cm. wide. Inflorescences 1 to several, racemose, abbreviated, diffuse, laxly few- (2- to 6-) flowered. Flowers small, whitish to yellow. Sepals oblong-lanceolate, long-acuminate, about 4 mm. long, the lateral ones free and slightly oblique. Petals slightly shorter than the sepals, linear-lanceolate, long-acuminate. Lip about half as long as the sepals, narrowly oblong-oblanceolate, slightly constricted below, abruptly narrowed to a more or less acute apex, minutely biauriculate at the base, about 2 mm. or more long. Column about as long as the lip, denticulate at the dilated apex, with a prominent foot.

"Peru"(?), fide Schlechter, Fedde Repert. Beih. 9: 141. 1921. Also West Indies (type) and Venezuela (not Brazil, as originally stated).

Pleurothallis pantasmoides C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 98, t. 31. 1951. Figure 59.

Plant stout, epiphytic, up to 34 cm. tall. Stems lightly arcuate, monophyllous, terete at the base, 4-angled below, gradually dilated and bialate above, up to 25.5 cm. long, with the apex extending for about 2 cm. into the basal part of the leaf. Leaf rigidly erect, elliptic-oblong, obtuse, cuneate below with the sides decurrent on the stem, about 10.5 cm. long through the center, up to 3.6 cm. wide. Inflorescences few (about 4), very short, arising from the apex of the stem (above the base of the leaf), arcuate-recurved, densely few-flowered. Flowers small, fleshy, bilabiate, densely fine-pubescent on the outer surface and ovary, reddish wine-color. Dorsal sepal oblanceolate-oblong, broadly obtuse, about 8.7 mm. long. Lateral sepals connate into a suborbicular lamina which is slightly bidentate at the rounded apex, broader than long, distinctly shorter and more than twice broader than the dorsal sepal. Petals less than half as long as the dorsal sepal, obliquely lanceolate-rhombic, broadly truncate or truncate-retuse at the apex, minutely denticulate on the upper half. Lip very fleshy, arcuate-recurved and about 3.5 mm. long in natural position, apparently ovate, with the sides of the basal portion erect and obscurely round-lobulate, broadly rounded in front, cuneate below. Column small, arcuate, about as long as the lip, abruptly wing-dilated above, denticulate toward the apex.

Cuzco: Prov. of Paucartambo, Yanamayo-Tambomayo, 1800 meters, *Vargas 6499*.

Pleurothallis parvifolia Lindl. Comp. Bot. Mag. 2: 355. 1836; Fol. Orch. Pleurothallis 41, no. 257. 1859; Cogn. Martius Fl. Bras. 3,

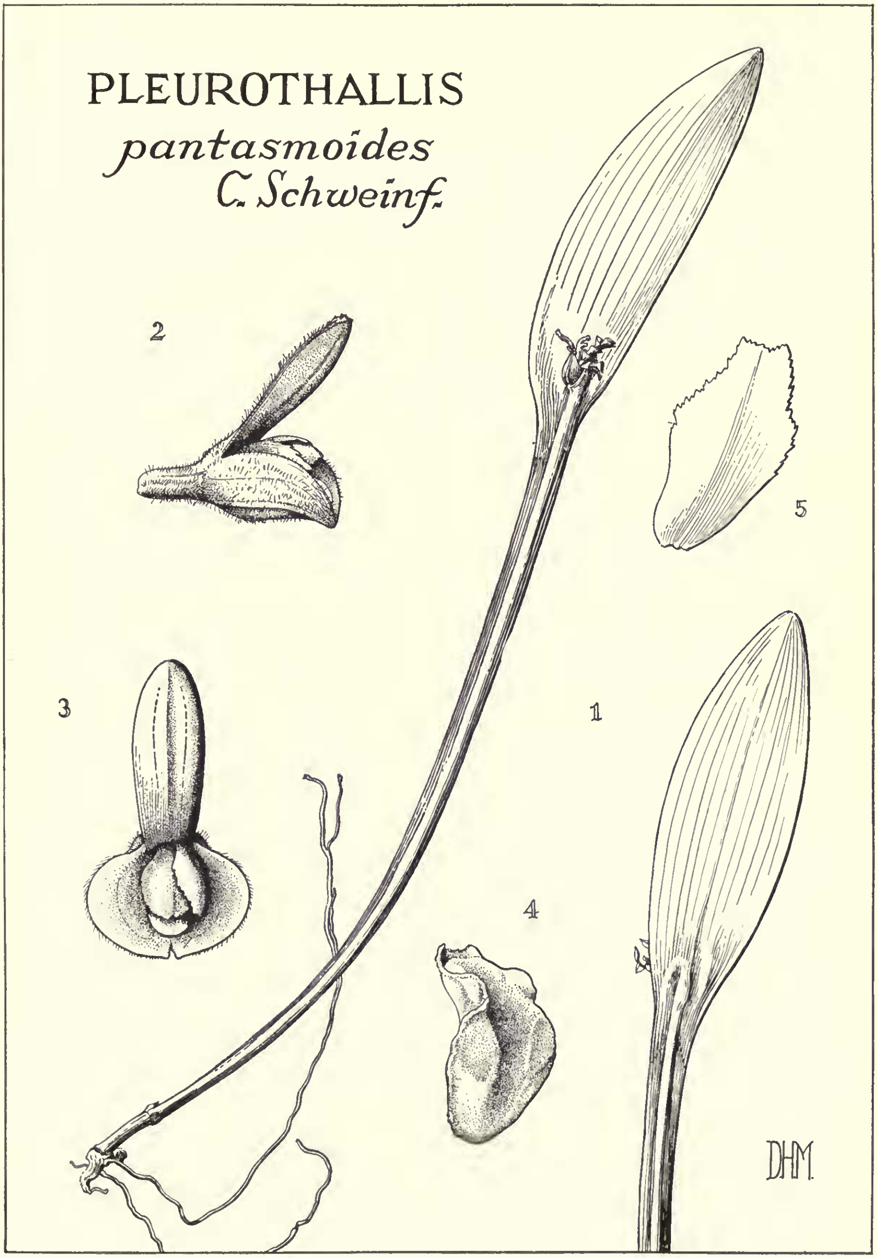

PLEUROTHALLIS
pantasmoïdes
C. Schweinf.
2
5
3
1
4
DHM

FIG. 59. *Pleurothallis pantasmoides* C. Schweinf. 1, plant; × ½. 2, flower from side; × 3. 3, flower from front, partially expanded; × 3. 4, lip, three quarters view; × 7½. 5, petal; × 7½.

pt. 4: 486, t. 116, fig. 4. 1896. *Humboldtia parvifolia* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant small, densely caespitose, up to about 6 cm. high. Stems minute, concealed by 2–3 loose, tubular, imbricating sheaths, about 5 mm. or less long. Leaf very small, obovate, rounded at the apex, long-cuneate below, up to 13 mm. long and 6 mm. wide. Scape solitary, filiform, much exceeding the leaf, bearing a fascicle of one to several long-pedicelled flowers at the summit (rarely there are vestiges of 9 pedicels), up to 4 cm. long. Flower rather small, membranaceous, white with purple lines. Dorsal sepal ovate-oblong, acute, about 6.5–7 mm. long. Lateral sepals connate into an ovate-elliptic lamina which is about as long as the dorsal sepal but broader. Petals about half as long as the sepals, oblong-obovate, acute. Lip slightly recurved, elliptic-rhombic or ovate-rhombic, gradually cuneate below, obtuse, about 4–5 mm. long and 2.9 mm. wide when extended. Column arcuate, about 3 mm. long at the back to the tip of the deeply trilobed wing.

Junín: Prov. of Tarma, Utcuyacu, 1800 meters, on tree in shade, *Woytkowski 37015.* Brazil (type).

The description was largely compiled from the above collection, together with a Brazilian collection (*Gehrt 4599*) in the Ames Herbarium.

Pleurothallis pedunculata (Kl.) Reichb. f. var. **peruviana** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 54. 1953.

Plant rather large, up to over 40 cm. high. Rhizome apparently abbreviated. Stems approximate, monophyllous, 8–18 cm. tall, provided with 2 or 3 close, tubular, evanescent sheaths. Leaf erect or erect-spreading, short-petioled; lamina elliptic to oblong-elliptic or ovate-oblong, acute or subacute, cuneate below, up to 13.5 cm. long and 4.3 cm. wide. Inflorescences 1 or 2 (3 peduncles sometimes present), much exceeding the leaf, about 23 cm. or less long, loosely racemose and several- to many-flowered above, rising from a conspicuous, conduplicate spathe up to 5.7 cm. long. Flowers rather large but smaller than in the species, yellow-green tinged with reddish. Dorsal sepal linear-lanceolate, attenuate above, about 1.6 cm. long. Lateral sepals connate into an oblong-lanceolate, long-acuminate, concave lamina which is somewhat shorter than the dorsal sepal but much broader. Petals similar to the dorsal sepal but slightly smaller, lanceolate-linear, caudate-acuminate and fleshy above. Lip much smaller than the other segments, tubular-involute, ovate to oblong-ovate when expanded, with the basal margins dilated and the anterior part narrowed to a rounded apex, about 5.9 mm. long and 4 mm. wide below. Column minute, dilated above.

Huánuco: Yanano, about 1800 meters, in patches on humus, *Macbride 3849.*

Pleurothallis penduliflora Kränzl. Fedde Repert. 1: 177. 1905.

Plant large, with an apparently abbreviated rhizome. Stems tall, approximate, up to 40 cm. or more long, monophyllous, provided with 2 or 3 tubular, maculate sheaths. Leaf suborbicular or very broadly oblong, abruptly contracted into a triangular apex, shallowly cordate at the sessile base, up to 18 cm. long and 11 cm. wide. Inflorescences about 6, very long and pendulous, loosely many-flowered, up to about 38 cm. long, arising from a conduplicate, acuminate spathe about 3 cm. long. Flowers rather small, bilabiate, ringent, brown. Dorsal sepal broadly ovate, acute or short-acuminate, concave, 8 mm. long. Lateral sepals entirely connate into a deeply concave, suborbicular-ovate, acute lamina which is about as long as the dorsal sepal. Petals somewhat longer than the sepals, linear, acuminate. Lip about half as long as the sepals, 3-lobed, broader than long, about 4 mm. long and 5.5 mm. wide; lateral lobes oblong, incurved, obtuse; mid-lobe shorter, retuse, excavated. Column short, retuse.

Junín: Prov. of Tarma, mountains of Yanangu, 2300–2400 meters, in low, humid, mossy woods, *Weberbauer 2118*.

The description of this species was emended by reference to a photograph of the type, in the Ames Herbarium.

Pleurothallis phalangifera (Presl) Schltr. Fedde Repert. Beih. 9: 141. 1921. *Acronia phalangifera* Presl, Rel. Haenk. 1: 104. 1827; Symb. Bot. 2: 10, t. 57. ?1833. *Pleurothallis Mathewsii* Lindl. Hook. Comp. Bot. Mag. 2: 355. 1836; Fol. Orch. Pleurothallis 8, no. 30. 1859. *Pleurothallis bogotensis* Lindl. Orch. Linden. 1, no. 3. 1846. *Humboldtia Mathewsii* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant large, with a creeping rhizome, 20 to about 56 cm. high. Stems rather distant, monophyllous, up to 34 cm. high (sometimes superposed), with 2 or 3 close, tubular sheaths of which the uppermost is longest. Leaf erect, oblong-ovate to oval, up to 16.8 cm. long and 8.2 cm. wide, acute or abruptly acuminate, sessile at the rounded base. Inflorescences 1 to several, fascicled, commonly much exceeding the leaf, up to about 30 cm. long, loosely few- to many-flowered. Flowers large, with spreading sepals and petals, greenish yellow or yellow and dark red (rarely greenish purple). Dorsal sepal from a lanceolate, concave base attenuate-caudate, up to 4.3 cm. long. Lateral sepals entirely connate into a lanceolate-attenuate lamina which is very similar to the dorsal sepal. Petals lanceolate-linear, tapering into a caudate-attenuate apex, erose-ciliolate below, a little shorter and much narrower than the sepals. Lip many times shorter than the sepals and petals, rhombic-ovate or suborbicular below, then abruptly linear-lanceolate, callose-thickened in the middle of the dilated portion and through the anterior portion, up to 8.2 mm. long. Column minute, less than half as long as the lip, dilated above.

Peru: Habitat not recorded, *Mathews 1902* (type of *Pleurothallis Mathewsii*).—Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 141. 1921.—Cuzco: Prov. of Urubamba, Tuncapata, Sta. Rita, 2800 meters, epiphyte in forest, *Vargas 2646*.—Huánuco: Near "Huanocco," habitat not recorded, in mountainous places, *Haenke s.n.* (type of *Acronia phalangifera*). Yanano, about 1800 meters, on humus, *Macbride 3848*. Also Colombia, Venezuela and Ecuador.

The description of the lip in *Acronia phalangifera* depicts a structure which is quite at variance with that of *Pleurothallis Mathewsii*, but the former concept has commonly been taken as synonymous with the latter, and it seems that there is no doubt of its identity.

Pleurothallis phyllostachys Schltr. Fedde Repert. Beih. 9: 76. 1921; Mansf. Fedde Repert. Beih. 57: t. 115, nr. 450. 1929.

Plant medium-sized, with a creeping, flexuous rhizome, up to 25 cm. high. Stems rather distant, stout, subterete below, more or less complanate and bialate above, monophyllous, up to 17.5 cm. high, provided at the base with 1 or 2 tubular, evanescent sheaths. Leaf erect, elliptic or oblong-elliptic, long-decurrent on the stem, obtuse to rounded at the apex, lightly cordate at the base, up to 10 cm. long, 3.3–5 cm. wide. Inflorescences arising from the apex of the stem well above the base of the leaf, commonly solitary, abbreviated, much shorter than the leaf, 3- to 5-flowered. Flowers orange turning to yellow, fleshy, medium-sized, bilabiate. Dorsal sepal linear-oblong or narrowly oblong-lanceolate, sharply acute ("obtuse"), 10–11 mm. long. Lateral sepals connate to about the middle, forming an ovate-oblong, sharply bidentate, concave lamina which is slightly shorter than the dorsal sepal, but much broader. Petals about half as long as the sepals, elliptic-oblanceolate ("linear ligulate"), acute, irregularly lacerate above, with a fleshy-thickened mid-nerve. Lip about equaling the petals, longitudinally concave, ovate-oblong when expanded, broadly rounded in front with minutely denticulate margins, fleshy-thickened in the middle of the basal part, about 5.6 mm. long. Column scarcely more than half as long as the petals, slender, arcuate, terminating above in a pair of ascending auricles, with a prominent foot.

Piura: Prov. of Huancabamba, Hacienda Chantaco, east of Huancabamba, 2500 meters, *Weberbauer 6313*.

I have seen isotype collections of this species in the Gray Herbarium.

Pleurothallis Poeppigii Lindl. Comp. Bot. Mag. 2: 354. 1836; Fol. Orch. Pleurothallis 16, no. 80. 1859; Cogn. Martius Fl. Bras. 3, pt. 4: 445. 1896. *Myoxanthus monophyllus* Poepp. & Endl. Nov. Gen. ac Sp. 1: 50, t. 88. 1836. *Humboldtia Poeppigii* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891. *Pleurothallis myoxanthus* Schltr. Fedde Repert. Beih. 9: 141. 1921.

Plant large, epiphytic, with an apparently abbreviated rhizome. Stems numerous, caespitose, stout, monophyllous, 20–45 cm. tall, provided with 3 or 4 close, tubular, evanescent sheaths. Leaf erect, lanceolate or oblong-lanceolate, long-attenuate to an obtuse, commonly bidentate apex, cuneate below to a sessile base, 30–40 cm. long, 5–6 cm. wide. Inflorescences abbreviated, 1-flowered, numerous, fascicled, forming a dense capitulum. Flowers large, white, membranaceous, partially immersed in hispid, imbricated bracts. Sepals subequal, from a narrowly ovate base very long subulate-attenuate, flexuous, 4–5 cm. long, the lateral ones being connate near the concave base. Petals similar to the sepals, filiform from a somewhat dilated base. Lip much smaller than the other members of the perianth, lanceolate or elliptic-lanceolate, attenuate to an obtuse apex, about 3 mm. long, purple. Column a little shorter than the lip, clavate, with a prominent porrect foot.

Huánuco: Near Cassapi (Casapi) and Cuchero (Cochero), on forest trees, *Poeppig 1743.*

Pleurothallis pruinosa Lindl. Bot. Reg. 28, Misc. 75, no. 55. 1842; Fol. Orch. Pleurothallis 26, no. 152. 1859; Cogn. Martius Fl. Bras. 3, pt. 4: 429. 1896. *Humboldtia pruinosa* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant small, caespitose, with an abbreviated or shortly creeping rhizome, rarely up to 11.5 cm. tall. Stems very slender, monophyllous, 2–8.8 cm. high, provided with 2 or 3 close, tubular, evanescent sheaths of which the uppermost is much the longest. Leaf erect, oblong (elliptic-oblong, ovate-oblong or linear-oblong), obtuse to rounded at the apex, commonly sessile with a rounded or cuneate base, 2–4.5 cm. long, up to 8 mm. wide. Inflorescences filiform, loosely racemose above, shorter than to slightly surpassing the leaf, up to 7-flowered, commonly solitary (occasionally 4 peduncles are present). Flower small, bilabiate, white or greenish to pale yellow. Dorsal sepal lanceolate-ovate, obtuse or acute, concave, about 3.8 mm. or less long. Lateral sepals entirely connate into a deeply concave, ovate, obtuse lamina which is about as long as the dorsal sepal. Petals linear, triangular-linear or linear-lanceolate, more or less falcate, porrect, acute, subequaling the sepals. Lip about half as long as the sepals or more, rhombic-ovate or triangular-ovate, acute or acuminate, cuneate below, with a more or less distinct callose thickening below the middle, up to 2.2 mm. long. Column minute, abruptly dilated near the apex.

Loreto: Vicinity of Iquitos, 100 meters, epiphyte, *Klug 10129.* A widely distributed and variable species ranging from the West Indies and Honduras to Panama, Venezuela, Colombia(?), British Guiana, French Guiana and Surinam (type).

Pleurothallis pusilla (HBK.) Lindl. Bot. Reg. 28, Misc. 82, no. 104. 1842; Fol. Orch. Pleurothallis 41, no. 262. 1859. *Dendrobium pusillum* HBK. Nov. Gen. et Sp. 1: 357. 1816. *Specklinia pusilla* Lindl. Bot. Reg. 21: sub. t. 1797. 1836. *Humboldtia pusilla* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant very small, caespitose, up to about 2.6 cm. high. Stems slender, 2- to 3-jointed, concealed by evanescent, lepanthiform sheaths, monophyllous, about 1.3 cm. long. Leaf elliptic to oval or obovate, rounded to subacute at the apex, narrowed to a short petiole, up to about 8 mm. long and 3.5 mm. wide. Inflorescences 1 to 3, about twice as long as the leaf, loosely 1- or 2-flowered above. Flowers small, yellow, about 4 mm. long. Sepals oblong-lanceolate, very long-acuminate. Dorsal sepal concave. Lateral sepals narrower, flat. Petals one third as long as the sepals, oblong. Lip oblong, subunguiculate.

Peru(?), fide Schlechter, Fedde Repert. Beih. 9: 142. 1921. Ecuador (type).

This is a very doubtful species of the Lepanthiformes section of *Pleurothallis*, and a photograph of *Dendrobium pusillum* in the Ames Herbarium, from which the description was largely drawn, fails to give a clear idea of the identity.

Pleurothallis quadrata C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 184, t. 19, figs. 1–4. 1942. Figure 60.

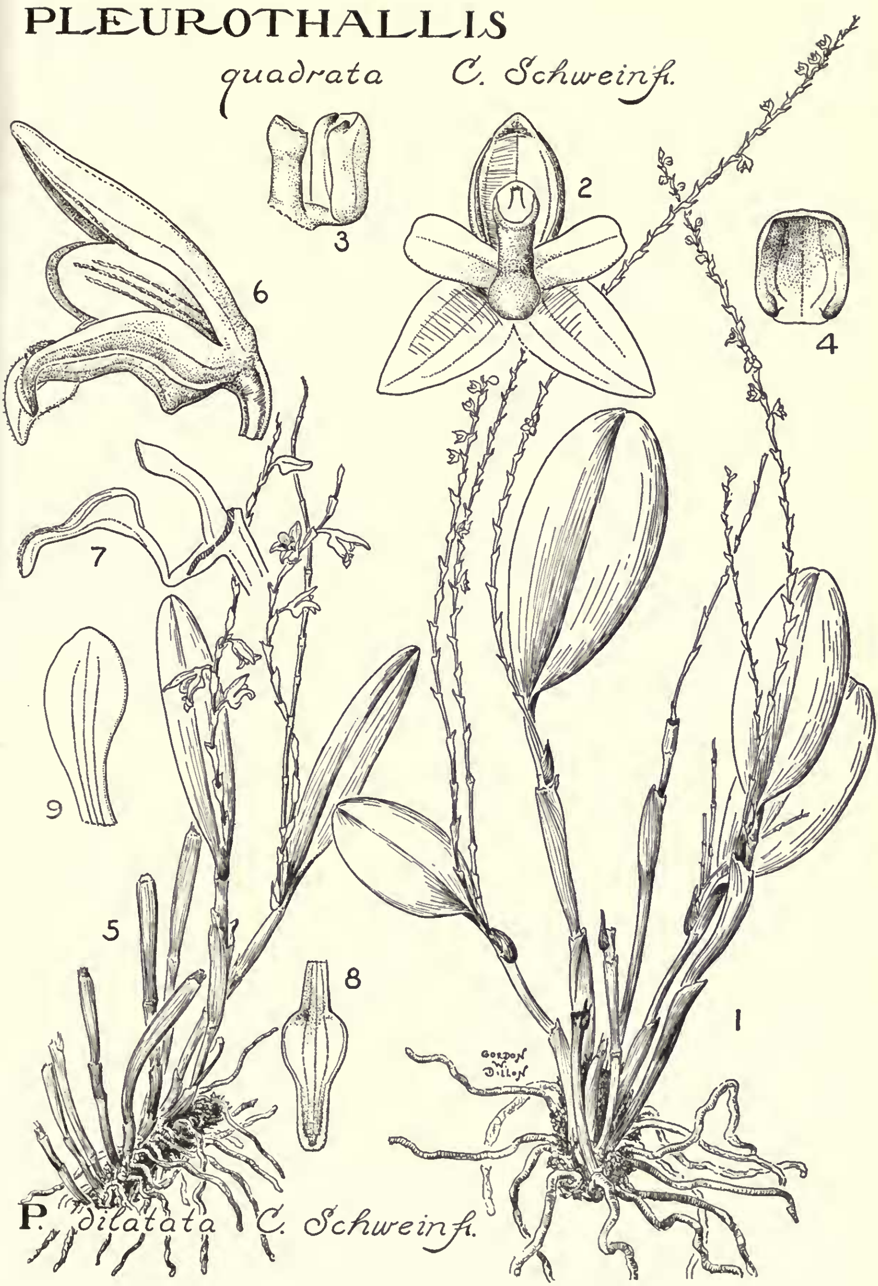
Plant small, caespitose, up to about 16.5 cm. high. Stems crowded, short, monophyllous, 2–4 cm. tall, mostly concealed by 2 loose, tubular, evanescent sheaths. Leaf abruptly short-petioled; lamina oval, minutely retuse at the rounded apex, rounded to broadly cuneate below, up to 3.9 cm. long and 1.9 cm. wide. Inflorescences much surpassing the leaf, commonly 1 or 2, subdensely racemose and many-flowered above, up to 12.6 cm. long. Flowers minute, rose-red mottled with purple, semiglobose. Dorsal sepal strongly cucullate, suborbicular, rounded at the apex, about 2.1 mm. long. Lateral sepals elliptic-ovate, connate to about the middle, obtuse or rounded at the apex, deeply concave, slightly longer than the dorsal sepal. Petals more than half as long as the sepals, oblong-subquadrate, lightly retuse at the truncate apex. Lip about as long as the petals, tubular-involute in natural position, quadrate when expanded, truncate in front with a short, fleshy callus at each outer corner. Column short and stout, a little shorter than the petals, with a stout, ovoid foot.

Junín: Schunke Hacienda, above San Ramón, 1400–1700 meters, epiphyte in dense forest, *Killip & Smith 24856*.

Pleurothallis restrepioides Lindl. Hook. Comp. Bot. Mag. 2: 356. 1836; Bot. Reg. 28, Misc. 68, no. 2. 1842; Fol. Orch. Pleurothallis 30, no. 174. 1859. *Humboldtia restrepioides* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891, as *H. restrepiodes*.

Plant rather large. Stems (incomplete in the type), monophyllous, often superposed or proliferous, up to 11 cm. or more long. Leaf erect, oblong to oblong-elliptic, sessile to very shortly petioled, obtuse, cuneate below, up to 11 cm. long and 3.9 cm. wide. Inflorescences 1 or 2, much surpassing the leaf, the longest one (incomplete in the type) up to 24 cm. long, loosely racemose above, several- to many-flowered, suberect to arcuate. Flower rather large, about 1.9 cm. long, bilabiate, purple and green. Dorsal sepal ovate, cymbiform, acuminate. Lateral sepals connate into a lanceolate-ovate, emarginate, cymbiform lamina which appears to be subequally long with the dorsal sepal. Petals distinctly shorter than the sepals, elliptic-lanceolate, acuminate. Lip a little longer than the petals, lanceolate in outline; lower half oblong, concave with erect sides; anterior half abruptly narrowed, linear, fleshy, recurved. Column about half as long as the petals, abruptly clavate above.

Amazonas: Chachapoyas, *Mathews s.n.*


PLEUROTHALLIS
quadrata C. Schweinf.
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5
8
GORDON W. DILLON
1
P. dilatata C. Schweinf.

FIG. 60. *Pleurothallis quadrata* C. Schweinf. 1, plant; × 1. 2, flower from front, expanded; × 10. 3, column and lip from side; × 10. 4, lip from above, expanded; × 10. *P. dilatata* C. Schweinf. 5, plant; × ½. 6, flower and ovary from side; × 4. 7, column and lip from side; × 4. 8, lip from above, expanded; × 4. 9, petal; × 4.

This description was largely based on a photograph of the type with floral analysis, from the Lindley Herbarium.

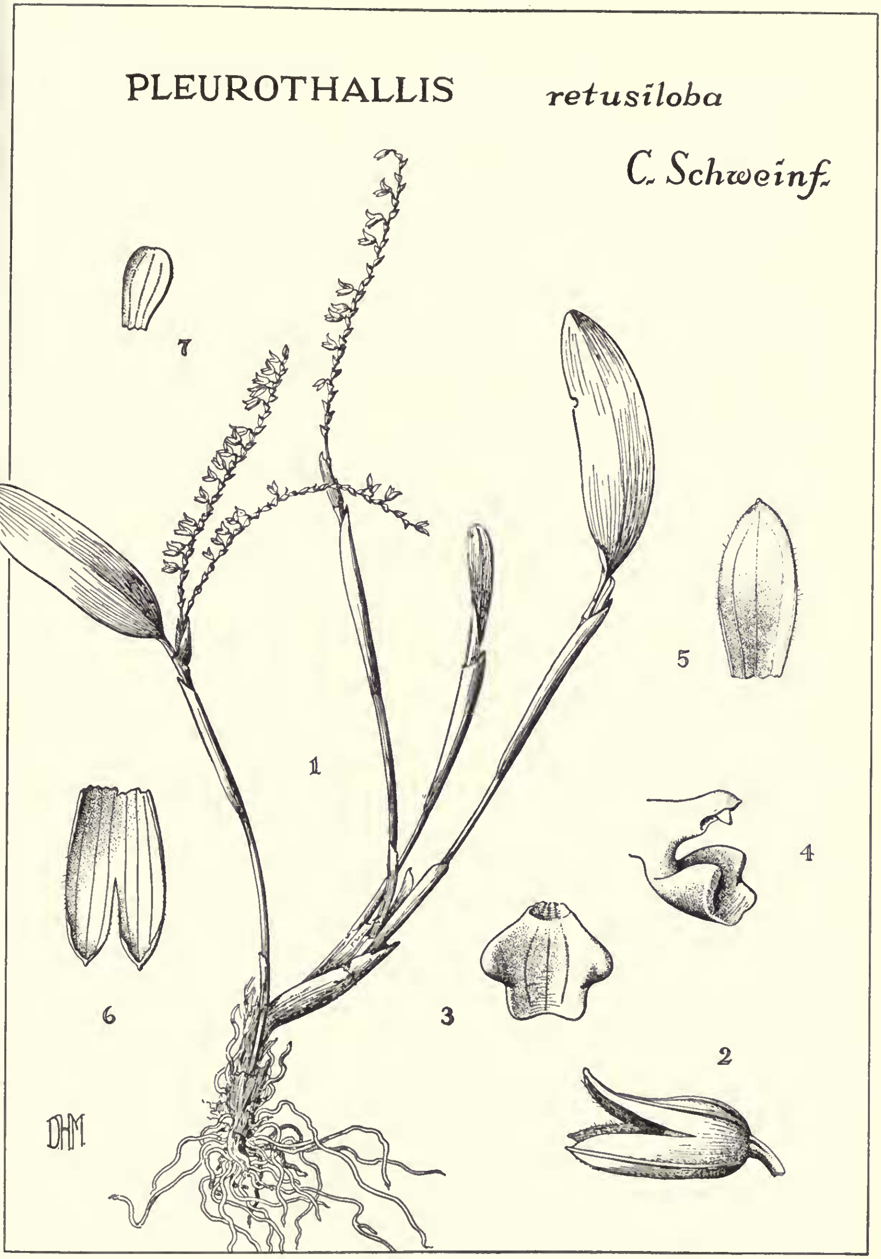
Pleurothallis retusiloba C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 100, t. 32. 1951. Figure 61.

Plant medium-sized, epiphytic, with a shortly creeping rhizome. Stems in fascicles of 2 or 3 enveloped at the base by 2 or more stout, tubular sheaths, or more rarely solitary and 2–3 cm. distant, about 9–14 cm. long, unifoliate, provided with 2 or 3 tubular sheaths. Leaf ascending, short-petioled; lamina elliptic-oblong, lightly retuse-bilobulate at the rounded apex, broadly cuneate at the base, up to 7.2 cm. long, about 2 cm. wide; petiole sulcate, up to 10 mm. long. Inflorescences 1 or 2, more or less surpassing the leaf, densely many-flowered nearly to the base, suberect to arcuate, about 9–14 cm. long, subtended by a conduplicate spathe up to 1.5 cm. long. Flowers small, nodding, secund, campanulate, membranaceous, about 5 mm. long. Sepals glabrous, but with involute ciliolate margins, connate at the base. Dorsal sepal strongly concave, oblong-ovate, acute, about 4.7 mm. long. Lateral sepals connate into an ovate-oblong, concave lamina which is divided to about the middle into a pair of acute lobules, about as long as the dorsal sepal and slightly wider. Petals about half as long as the sepals, oblong-cuneate, obliquely subtruncate or slightly retuse above. Lip very small, longitudinally concave, about 1.5 mm. long and slightly wider, suborbicular-obovate in outline when expanded, rather deeply 3-lobed; lateral lobes semiobovate, spreading; mid-lobe subquadrate, about twice as broad as long, shallowly retuse. Column stout, minute, with a prominent fleshy foot.

Cuzco: Prov. of Paucartambo, Pillahuata, 3000 meters, epiphyte in rain-forest, *Vargas 3030*.

Pleurothallis rhynchantha (Reichb. f. & Warsc.) L. O. Wms. Bot. Mus. Leafl. Harvard Univ. 7: 188. 1939. *Restrepia cucullata* Lindl. Ann. & Mag. Nat. Hist. 15: 108. 1845; Fol. Orch. Restrepia 3, no. 8. 1859, not *Pleurothallis cucullata* Ames (1923). *Restrepia rhynchantha* Reichb. f. & Warsc. Bonpl. 2: 114. 1854. *Barbosella cucullata* Schltr. Fedde Repert. 15: 261. 1918. *Barbosella rhynchantha* Schltr. Fedde Repert. 15: 263. 1918. *Pleurothallis angustisegmenta* C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 139. 1942.

Plant small to medium-sized, with an ascending, more or less branching rhizome which is concealed by scarious sheaths. Stems abbreviated, ascending, unifoliate, up to 2.2 cm. long, concealed by 2–3 loose, imbricating sheaths. Leaf cuneate-oblong to oblanceolate-linear, obtuse and apiculate, long-narrowed below, frequently conduplicate and arcuate in the dried specimen, very coriaceous, up to 7.5 cm. long and 7 mm. wide. Peduncle filiform, 1-flowered, much surpassing the leaf, up to 20 cm. long. Flower large, campanulate, dark pink to wine-red, variable in size. Dorsal sepal linear-attenuate, about 1.9–5.5 cm. long. Lateral sepals connate into a narrowly lanceolate, minutely bidentate lamina which is slightly shorter but much broader than the dorsal sepal. Petals about a third


PLEUROTHALLIS retusiloba
C. Schweinf.
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DHM

FIG. 61. *Pleurothallis retusiloba* C. Schweinf. 1, plant; × ½. 2, flower from side, natural position; × 5. 3, lip, expanded; × 10. 4, column and lip, three quarters view; × 10. 5, dorsal sepal, expanded; × 5. 6, lateral sepals, expanded; × 5. 7, petal; × 5.

to a half as long as the sepals, lanceolate-linear, gradually long-caudate. Lip minute, oblong to ovate-oblong, rounded to truncate at the apex, fleshy, more or less angled and dilated below the middle when the erect sides are expanded, with a pair of keels near the base which are confluent above, about 4 mm. or more long. Column short, about equaling the lip, the upper half cucullate-winged.

Peru: *Warscewicz s.n.* (type of *Restrepia rhynchantha*).—Cuzco: Prov. of Paucartambo, Pillahuata, 3000 meters, epiphytic in rainforest, *Vargas 3014*. Prov. of Urubamba, Machu-Picchu, 2040 meters, on rocks or cliffs, *Vargas 5549*.—Junín: Chanchamayo Valley, 1400 meters, *Schunke 1234*. Also Colombia (type of *Restrepia cucullata*) and Ecuador.

Pleurothallis rigidifolia Reichb. f. Bonpl. 3: 224. 1855; Lindl. Fol. Orch. Pleurothallis 18, no. 100. 1859. *Humboldtia rigidifolia* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant variable, commonly large, with an abbreviated rhizome. Stems approximate, monophyllous, about 11.5–62 cm. high, entirely concealed by 4 to numerous tubular, evanescent sheaths which are close and dark-pubescent in the lower portion of the stem and commonly looser and glabrous above. Leaf erect or spreading, sessile, lanceolate or narrowly lanceolate to narrowly lanceolate-elliptic, narrowed to an obtuse, minutely tridenticulate apex, cuneate below, 8.9–26.5 cm. long, up to 5 cm. wide, rigid-coriaceous. Inflorescences abbreviated, numerous, 1-flowered, forming a dense glomerule just below the apex of the stem. Flowers small, variable in size, pale yellow or white. Dorsal sepal lanceolate or oblong-lanceolate, acute or acuminate, concave, 3.4–11 mm. long. Lateral sepals free, similar to the dorsal sepal but a little shorter and commonly broader, oblique. Petals from a broader basal portion more or less abruptly contracted into a long, narrowly oblong to linear anterior portion which is more or less thickened, slightly shorter than to somewhat exceeding the sepals. Lip very small, lightly recurved in natural position, oblong to oblong-ovate in outline, simple or obscurely 3-lobed with the lower half more or less dilated and the anterior half ovate or ovate-oblong, more or less acute, 2–3 mm. long, up to 1.7 mm. wide. Column minute, stout, arcuate, with a narrow tooth on either side of the clinandrium, up to 2.1 mm. high, with a distinct foot.

Amazonas: Chachapoyas, on rocks, *Mathews 3187* (type). Prov. of Bongara, Pomocochas, across southern end of Lake Pomocochas from village, 2460 meters, forming large clump on tree trunk in the mountain rain-forest of Quebrada Corazón Jacko, *Hodge 6151*.—Huánuco: District of Churubamba, Hacienda Mercedes, on trail to Balsa-playa, 1200 meters, on tree trunk in original forest, *Mexia 8198a*.—Junín: Chanchamayo Valley, 1500 meters, *Schunke 1276*. Prov. of Tarma, Agua Dulce, 1900 meters, on tree in low highland forest, *Woytkowski 35435*.—Loreto: Vicinity of Iquitos, 100 meters, epiphyte, *Klug 10134*.

Pleurothallis ringens C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 186, t. 21. 1942. Figure 62.

Plant medium-sized, caespitose, up to 27 cm. high. Stems monophyllous, up to 17.5 cm. or more tall, provided below with 2 or 3 close, tubular, evanescent sheaths. Leaf erect, rather long-petioled; lamina oval or ovate-elliptic, rounded or obtuse at the apex, broadly cuneate at the base (appearing to be rounded in the dried specimen), up to 8.5 cm. long and 4.2 cm. wide; petiole slender, about 2 cm. or less long. Inflorescences abbreviated, 1-flowered, few to numerous, in the axil of a prominent conduplicate spathe up to 1.8 cm. long. Flowers medium-sized, bilabiate, ringent, translucent with red lines. Dorsal sepal strongly cucullate, lanceolate-ovate, acute or acuminate, about 12.3 mm. long. Lateral sepals connate into an oblong-lanceolate, navicular lamina which is shortly bidentate at the apex, slightly shorter than the dorsal sepal but much narrower. Petals much shorter than the sepals, linear-lanceolate in outline, oblique, long-narrowed to the acute apex, with a short subquadrate basal portion which terminates in a pair of unequal teeth (one on each side). Lip sigmoid and about 6.4 mm. long when viewed from the side in natural position, deeply 3-lobed; lateral lobes erect, porrect and parallel, arcuate-oblong, very obliquely bilobed above the middle, broadly obtuse; mid-lobe much larger, narrowly ovate-triangular from a broad base, obtuse. Column very short, less than half as long as the lip, dilated toward the base.

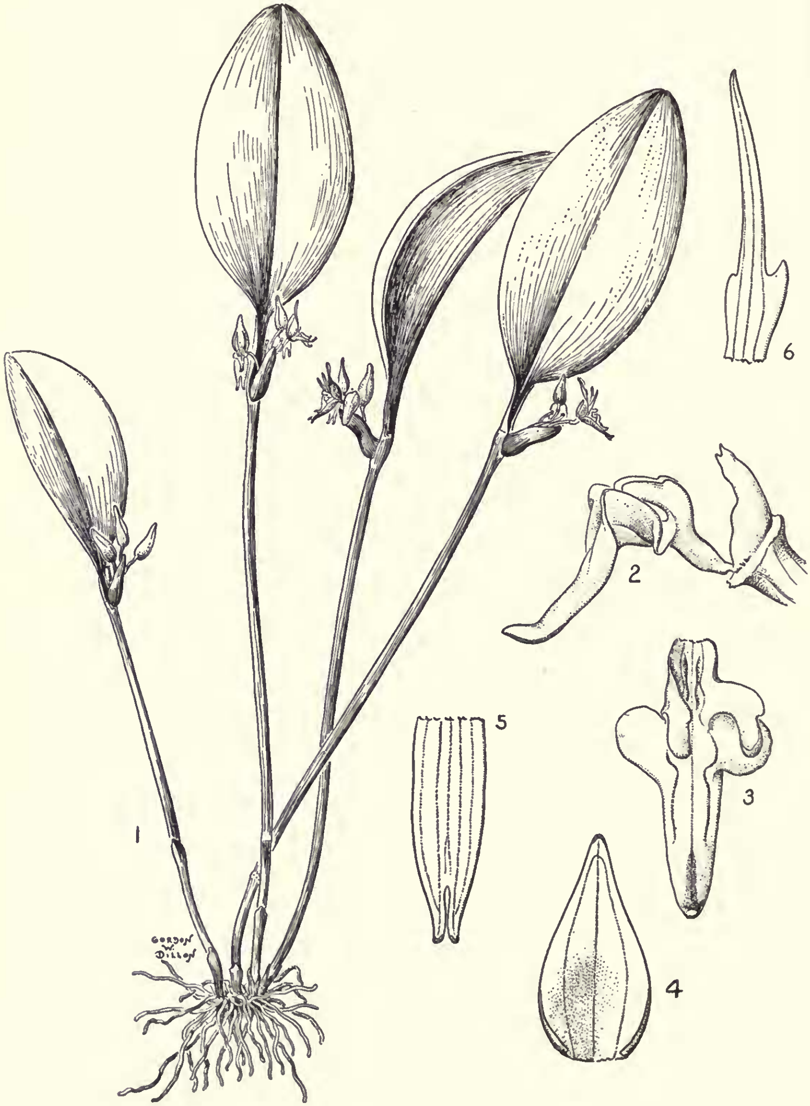
Junín: La Merced, Hacienda Schunke, about 1230 meters, epiphyte, *Macbride 5618* (type). Chanchamayo Valley, 1500 meters, *Schunke 1097*. Same locality, 1200 meters, *Schunke 1110*.

Pleurothallis rubens Lindl. Bot. Reg. 21, sub. t. 1797, no. 32. 1836; Fol. Orch. Pleurothallis 31, no. 183. 1859; Cogn. Martius Fl. Bras. 3, pt. 4: 565. 1896. *Humboldtia rubens* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant medium-sized, caespitose. Stems approximate, monophyllous, 3–9 cm. high, provided with 2 or 3 tubular, evanescent sheaths. Leaf erect, commonly short-petioled; lamina oblong to narrowly elliptic, obtuse to rounded at the apex, cuneate at the base, 4.7–9.5 cm. long, up to 2.5 cm. wide; petiole stout, up to 1.2 cm. long. Inflorescence solitary (rarely 2), much surpassing the leaf, racemose above, densely or subdensely many-flowered, up to 52 cm. long, erect to arcuate. Flowers rather small, erect, with spreading segments, yellow becoming reddish. Dorsal sepal lanceolate, acute or acuminate, concave, 8.6–10 mm. long. Lateral sepals free, obliquely lanceolate, acute or acuminate, subequal to the dorsal sepal. Petals about half as long as the sepals, oblong to cuneate-oblong, broadly rounded or subtruncate at the apex. Lip somewhat larger than the petals, cuneate-oblong in outline, pandurate (i.e., constricted near the middle), about 5 mm. long; basal half rounded on each side, with a pair of erect fleshy ridges; anterior half suborbicular or suborbicular-ovate, with broadly rounded or truncate-subretuse apical margin. Column about equaling the petals; body minute, with a subequally long, triangular-lanceolate, obtuse apical wing.

Junín: Chanchamayo Valley, 1500 meters, *Schunke 516*. Brazil (type).

PLEUROTHALLIS
ringens C. Schweinf.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Gordon W. Dillon

FIG. 62. *Pleurothallis ringens* C. Schweinf. 1, plant; × ½. 2, lip and column from side; × 5. 3, lip from above, partially expanded; × 5. 4, dorsal sepal; × 2½. 5, lateral sepals; × 2½. 6, petal; × 5.

Pleurothallis ruberrima Lindl. Orch. Linden. 1, no. 5. 1846; Fol. Orch. Pleurothallis 10, no. 43. 1859. *Humboldtia ruberrima* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant large, epiphytic, about 52 cm. or more high to the tip of the erect leaf. Stem slender, up to more than 32 cm. tall (incomplete in specimens seen), monophyllous, with a close, elongate, tubular sheath below. Leaf elliptic-lanceolate to linear-lanceolate, acuminate or long-acuminate, shallowly cordate at the base, up to 18.8 cm. in greatest length and 4.5 cm. wide. Inflorescences fascicled, 1 to several in the axil of a slender, conduplicate spathe up to 2.8 cm. long. Flowers large, long-pedicelled, bilabiate, pink-brown, red streaked with purple, or purple. Dorsal sepal oblong-lanceolate, acute, up to 2.7 cm. long. Lateral sepals entirely connate into a broadly ovate, acute or acuminate lamina which is much shorter and broader than the dorsal sepal. Petals about four times shorter than the dorsal sepal, linear or narrowly triangular-lanceolate, acuminate, obliquely cordate at the base, more or less falcate. Lip relatively minute, round-ovate, concave, apiculate, cordate at the base, denticulate on the margins, about 4 mm. long. Column minute.

Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayocc, 2200 meters, epiphyte in dense forest, *Vargas 2547*. Also Venezuela (type), Colombia and Ecuador.

I have examined a photograph of typical material from the Lindley Herbarium.

Pleurothallis ruscifolia (Jacq.) R. Br. Ait. Hort. Kew. ed. 2. 5: 211. 1813; Cogn. Martius Fl. Bras. 3, pt. 4: 451. 1896. *Epidendrum ruscifolium* Jacq. Enum. Pl. Carib. 29. 1760; Select. Stirp. Am. 226, t. 133, fig. 3. 1763. *Dendrobium ruscifolium* Sw. Nov. Act. Ups. 6: 84. 1799. *Pleurothallis succosa* Lindl. Gen. & Sp. Orch. (1830) 5. *Humboldtia succosa* Pav. ex Lindl. Gen. & Sp. Orch. (1830) 5, in synon. *Pleurothallis multicaulis* Poepp. & Endl. Nov. Gen. ac Sp. 1: 47, t. 82. 1836. *Humboldtia ruscifolia* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891. Figure 63.

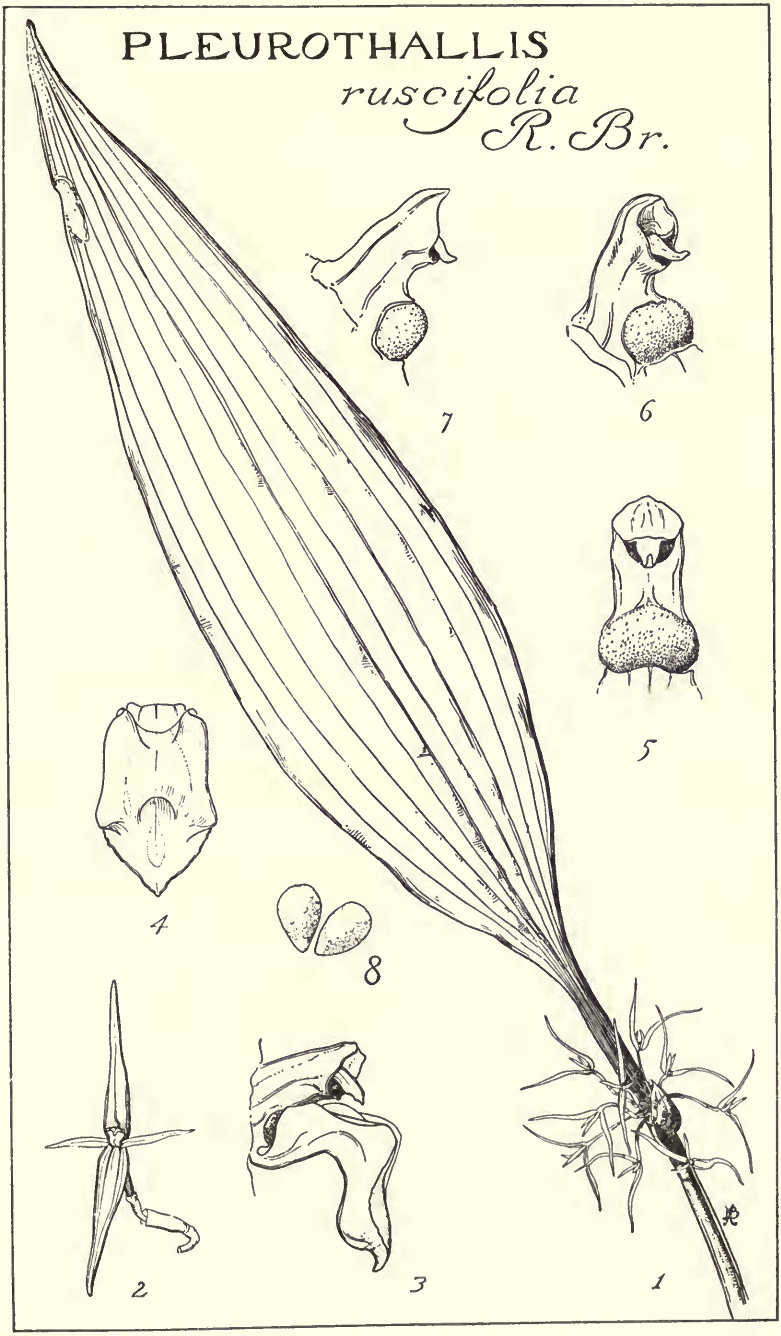
Plant variable throughout, small to large. Rhizome creeping. Stems numerous, more or less approximate, slender, monophyllous, 3–38 cm. high, provided with 2–3 close, tubular, evanescent sheaths of which the uppermost is longest and separated. Leaf erect, petioled, 5–20.5 cm. long; lamina elliptic to linear-elliptic (rarely lanceolate or ovate-lanceolate), acute or more often long-acuminate, usually long-cuneate below, up to 18 cm. long, 0.5–5.3 cm. wide; petiole up to 3 cm. long, for the most part gradually dilated into the lamina. Inflorescences abbreviated, 1-flowered, numerous. Flowers small, bilabiate, greenish or whitish-green to yellow. Dorsal sepal lanceolate or ovate-lanceolate, from an ovate, deeply concave base acuminate or long-attenuate, 6–10 mm. long. Lateral sepals entirely connate into a very similar but usually slightly narrower, concave lamina which is minutely retuse at the tip. Petals linear-lanceolate (rarely filiform), acuminate, subequaling or shorter than the sepals. Lip many times shorter than the sepals, abruptly reflexed near the middle and more or less sigmoid when viewed from the side, ovate or oblong-ovate when expanded, acute or acuminate, about 2 mm. long, with a small callus in the middle near the base. Column minute, about half as long as the lip, with a fleshy, subglobose dilation at the base.

Peru: Habitat not recorded, *Pavón s.n.* (*P. succosa*), *Henschel 368.*—Cuzco: Prov. of Paucartambo, S. Pedro to Sta. Isabel, 1320 meters, on old tree trunks, *Vargas 6781.*—Huánuco: Near Cassapi (Casapi), *Mathews 1916.* Near Pampayaco (Pampayacu) and Cuchero (Cochero), in subandean woods, *Poeppig 1430* (*P. multicaulis*). Left bank of Río Huallaga, above Cayumba, 805 meters, on tree trunks and branches, *Mexia 8313.* District of Churubamba, Hacienda Mercedes, on trail to Balsa-playa, 1200 meters, on tree trunks in dense shade, *Mexia 8178* (no flowers).—Puno: Prov. of Carabaya, near Ollachea, 2550 meters, *Vargas 6936.*—San Martín: Zepelacio, near Moyobamba, 1100–1200 meters, epiphyte in forest, *Klug 0.22, 3626.* A widespread species extending from the West Indies (type) and Guatemala to Panama, British Guiana, Colombia, Ecuador, Peru and Bolivia.

Pleurothallis scabrata Lindl. Fol. Orch. Pleurothallis 30, no. 176. 1859. *Humboldtia scabrata* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant large, up to over 91 cm. high, with a stout creeping rhizome which is concealed by evanescent sheaths. Stems more or less distant, monophyllous, about 30.5 cm. or less tall, provided with 2 or 3 evanescent, close, tubular sheaths. Leaf erect, sessile, elliptic-oblong, obtuse to rounded at the apex, cuneate at the base, up to 19.7 cm. long and 4.5 cm. wide. Inflorescence commonly solitary, more or less erect, much surpassing the leaf, loosely many-flowered above, about 61 cm. or less tall. Flowers medium-sized, secund, maroon or brown-violet, bilabiate, with the segments little spreading. Dorsal sepal oblong-lanceolate, concave, narrowed to an obtuse tip, carinate, about 13 mm. long. Lateral sepals entirely connate into a lanceolate lamina which is deeply concave, subequally long but broader than the dorsal sepal. Petals somewhat shorter than the sepals, narrowly lanceolate in outline, from an elliptic, subentire basal portion rather abruptly narrowed into a linear-triangular apical part which is scabrous and finely erose-denticulate on the margin. Lip about half as long as the petals, from a broad auriculate claw rather abruptly dilated into a suborbicular median portion, then abruptly contracted into an ovate-ligulate, acute, scabrous lobule, about 5 mm. long and 3 mm. wide in the middle; disc rather obscurely bilamellate near the middle. Column abbreviated and stout.

FIG. 63. *Pleurothallis ruscifolia* (Jacq.) R. Br. 1, leaf and inflorescence; × 1. Drawn from a Jamaican plant (*W. R. Maxon 9486*). 2, flower, much enlarged. 3, lip and column from side, much enlarged (anther removed). 4, lip, much enlarged. 5–7, column much enlarged, to show the pulvinate foot, rostellum and stigmatic oriface under the rostellum (anther removed). 8, pollinia, much enlarged.



PLEUROTHALLIS *ruscifolia* R. Br.

Amazonas: Prov. of Bongara, Quebrada Chido, 2 miles southwest of village of Pomocochas, about 2400 meters, common epiphyte in large clumps in mountain rain-forest, *Hodge 6145*. Bolivia (type), Ecuador (form with larger flowers and narrower sepals and petals).

The above diagnosis was amplified from a photograph with floral analysis, from the Lindley Herbarium.

Pleurothallis scabrilinguis Lindl. Hook. Comp. Bot. Mag. 2: 354. 1836; Fol. Orch. Pleurothallis 11, no. 49. 1859. *Humboldtia scabrilinguis* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant small to medium-sized, caespitose. Stems crowded, slender, monophyllous, up to 24.5 cm. high, provided with 2 close, tubular sheaths of which the upper one is separate and elongate. Leaf horizontally spreading, narrowly lanceolate, long-acuminate to an obtuse, minutely tridenticulate apex, shallowly cordate at the sessile base, up to 10 cm. long and 2 cm. wide. Inflorescences abbreviated, 1-flowered, 1 to several. Flowers small, bilabiate, dark purple. Dorsal sepal elliptic, concave, acute, about 7 mm. long. Lateral sepals entirely connate into a broadly ovate, concave lamina which is slightly shorter and broader than the dorsal sepal. Petals markedly shorter than the sepals, linear-lanceolate, lightly falcate, serrulate. Lip prominently clawed, subequal to the petals; lamina broadly ovate or obovate, obtuse, retuse-sagittate at the base, verrucose, about 4.5 mm. long, with the midnerve thickened near the apex. Column abbreviated, stout.

Peru: Habitat not recorded, *Mathews 1904* (type). Cuzco: Prov. of Quispicanchis, Hda. Ttío, Marcapata, 2000 meters, in open rocky places, *Vargas 3124*.

The above diagnosis was compiled with the aid of a photograph of the type bearing a floral analysis, from the Lindley Herbarium.

Pleurothallis Schweinfurthii L. A. Garay, Orch. Journ. 3, no. 4: 188, fig. 73. 1954. *Pleurothallis lanceolata* Lindl. var. *gracilis* C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 182. 1942, not *P. gracilis* Barb. Rodr.

Plant slender, variable, up to 30 cm. tall. Rhizome abbreviated. Stems caespitose, 4.5–11 cm. high, with a long, close, tubular, evanescent sheath below the middle. Leaf prominently petioled; lamina elliptic to narrowly elliptic-lanceolate, acute or acuminate, up to 10.5 cm. long and 2.7 cm. wide. Inflorescences 1 or 2, commonly much surpassing the subtending leaf, up to 20.5 cm. long; basal spathe very conspicuous, laterally compressed, up to 5 cm. long; raceme loosely several- to many-flowered. Flowers rather large, with wide-spreading segments, greenish violet. Dorsal sepal linear-lanceolate, gradually long-acuminate, up to 2.1 cm. long. Lateral sepals similar, about as long as the dorsal sepal but twice as wide, entirely connate up to the apex. Petals linear-lanceolate from an ovate-triangular basal portion, aristate-acuminate, a little shorter than the sepals. Lip linear-lanceolate, gradually long-acuminate, about as long as the petals, slightly concave at the base. Column minute, dilated at the base and apex.

San Martín: Zepelacio, near Moyobamba, 1200–1600 meters, epiphyte in forest, *Klug 3563.*

Pleurothallis secunda Poepp. & Endl. Nov. Gen. ac Sp. 1: 49, t. 85. 1836. *Pleurothallis Lindenii* Lindl. Ann. & Mag. Nat. Hist. 12: 397. 1843; Orch. Linden. 1, no. 2. 1846; Fol. Orch. Pleurothallis 7, no. 28. 1859. *Pleurothallis Lindenii* Lindl. var. *pumila* Reichb. f. Bonpl. 3: 72. 1855. *Pleurothallis Lindenii* Lindl. var. *gigantea* Reichb. f. Bonpl. 3: 240. 1855. *Humboldtia Lindenii* O. Ktze. Rev. Gen. Pl. pt. 2: 667. 1891. *Humboldtia secunda* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891. *Pleurothallis araguensis* Ames, Sched. Orch. 1: 9. 1922.

Plant medium-sized to large, extremely variable throughout, with a more or less conspicuous creeping rhizome. Stems commonly approximate, monophyllous, slender, about 7–34 cm. long, with 2–3 close, tubular, evanescent sheaths. Leaf erect, elliptic or elliptic-oblong to lanceolate-oblong, acute or acuminate, commonly gradually narrowed to a sessile or shortly petioled base (rarely broadly cuneate at the base), 7.6–30 cm. long, up to 4.3 (rarely 7.6) cm. wide. Inflorescences usually 1 or 2 (rarely remnants of 7 peduncles appear), loosely racemose, more or less shorter than the leaf (rarely about equally long), few-flowered, commonly diffuse or nodding. Flowers medium-sized, bilabiate. Dorsal sepal ovate or oblong-ovate to lanceolate or oblong-lanceolate, acute or acuminate (rarely obtuse), concave, up to 12 mm. long. Lateral sepals entirely connate into a deeply concave, suborbicular-ovate (rarely lanceolate) lamina which is subequally long with the dorsal sepal but much broader. Petals narrowly lanceolate, ovate-lanceolate or elliptic-lanceolate (rarely triangular-lanceolate), more or less oblique, acuminate or long-acuminate, sometimes with a curved apical portion, shorter than or subequaling the dorsal sepal. Lip relatively minute, ovate or suborbicular-ovate from an abruptly reflexed base, deeply cordate below, often acute or apiculate at the commonly rounded apex, about 3.2 mm. or less long through the middle, with a pair of fleshy calli near the base. Column minute, stout, embraced by the basal auricles of the lip.

Huánuco: Near Cuchero (Cochero), on tree trunks, *Poeppig 1746* (type of *P. secunda;* the lip was poorly drawn and described in the type diagnosis).—Junín: Chanchamayo Valley, 1500 meters, *Schunke 1303.* Same locality, 1800 meters, *Schunke 1708.* Pichis Trail, Porvenir, 1500–1900 meters, epiphyte in dense forest, *Killip & Smith 25932.* Schunke Hacienda, above San Ramón, 1400–1700 meters, epiphyte in dense forest, *Killip & Smith 24858* (no petals or lip on the flower present).—Loreto: Pumayacu, between Balsapuerto and Moyobamba, 600–1200 meters, epiphyte in forest, *Klug 0.13.* Also Venezuela (type of *P. Lindenii* and *P. araguensis*), Colombia and Ecuador.

The correct identity of this species was pointed out by Mr. Leslie A. Garay, of Toronto, Canada.

Pleurothallis secunda Poepp. & Endl. var. **longiracema** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 17: 41. 1955. *Pleurothallis Lindenii* Lindl. var. *longiracema* C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 53. 1953.

Plant medium-sized, up to 39 cm. tall to the tip of the erect inflorescence. Stems often proliferating, the lower stems 9–21 cm. long. Leaves sessile or very short-petioled, ovate-oblong to elliptic-oblong, acute or acuminate, up to 11.5 cm. long and 2.8 cm. wide. Inflorescences solitary, strict or nearly so unlike those of the type, loosely few- to several-flowered, up to 18 cm. long, arising from a rather prominent, conduplicate spathe up to 1.9 cm. long. Flowers bilabiate, rather similar to those of the type. Sepals similar to those of the species. Petals shorter than the sepals, oblong-linear, acute, lightly oblique. Lip much smaller than the other segments, suborbicular-ovate, lightly but distinctly 3-lobed, cordate at the base, acute in front, about 4 mm. long and broader near the base; lateral lobes obliquely ovate-rounded; mid-lobe larger, triangular-ovate. Column stout, minute.

Cuzco: Prov. of Urubamba, Tuncapata, Sta. Rita, 2800 meters, epiphytic, *Vargas 2663* (type). Near Tuncapata, 2600 meters, "laderas junto al camino entre herbáceas," *Vargas 4098.*

Pleurothallis serripetala Kränzl. Engler Bot. Jahrb. 54, Beibl. 117: 23. 1916.

Rhizome abbreviated, stout. Plant large. Stems stout, caespitose, monophyllous, up to 52 cm. tall, mostly concealed by several close, tubular, evanescent sheaths, those near the base being densely hairy. Leaf erect, oblong-lanceolate to narrowly elliptic-oblong or elliptic, obtuse or subacute, cuneate at the sessile base, 13.5–25 cm. long, up to 5 cm. wide, thickly coriaceous. Inflorescences abbreviated, several, fascicled, 1-flowered, with fusco-pilose plurisulcate ovary and scarious bracts. Flowers rather large, brown, successive, 2 cm. or more long. Dorsal sepal oblong-lanceolate, 1.9–2.2 cm. long, acuminate, velvety within, densely short-pubescent without. Lateral sepals similar, about as long as the dorsal sepal but somewhat broader, oblique, connate through the basal third. Petals much smaller, about one third to one half as long as the sepals, rhombic-oblanceolate in outline, abruptly contracted above the middle into a nearly caudiform apex, with the margins of the middle portion dentate-erose. Lip subequaling the petals, arcuate-recurved, short-clawed, from a hastate base triangular and narrowed to an obtuse, fleshy tip, entire but with the lower margins lacerate-dentate, about 7–9 mm. long. Column slender, arcuate, about as long as the petals and lip.

Apurimac: Prov. of Andahuaylas, Posocoi Ravine, 2700 meters, on rocks, *Vargas 8790.*—Cuzco: Prov. of Calca, between Lamai and Calca, 1950 meters, on rocks, *Vargas 3196.* Valle del Urubamba, Ollantaitambo, 2800 meters, *Herrera 3484.* Ollantaitambo, 3000–3100 meters, terrestrial on rocky slope, *Pennell 13641* (flowers poor). —Junín: Prov. of Huancayo, valley-system of Pariahuanca, between Panti and Rocchac, 2400–2600 meters, in sclerophyllous vegetation consisting of trees and shrubs, *Weberbauer 6538* (type).

Pleurothallis simplicilabia C. Schweinf. Rev. Acad. Colomb. Ciénc. Exact. Físic. y Natur. 5, no. 19: 350. 1943.

Plant rather large, epiphytic. Rhizome not present in the type. Secondary stem (in our specimen) strongly arcuate from a decumbent base, monophyllous, about 17.5 cm. long, provided below the middle with a long, close, tubular sheath. Leaf obscurely petioled, elliptic-oblong, broadly rounded at the apex, broadly cuneate at the base, 10.3 cm. long, nearly 4 cm. wide. Racemes numerous (about 13), much surpassing the leaf, up to 26.5 cm. long, floriferous nearly to the base, densely many-flowered above. Flowers small for the genus, yellow, campanulate, membranaceous. Sepals more or less connate at the base. Dorsal sepal deeply concave, oblong-ovate when expanded, acute and mucronate, about 4.8 mm. long, irregularly fimbriate. Lateral sepals oblong-lanceolate, acute, more or less connate below, about equally long with the dorsal sepal but narrower, irregularly fimbriate. Petals obliquely lanceolate-oblong, broadly rounded at the apex, about two thirds as long as the sepals and narrower. Lip smaller than the petals, concave-conduplicate in natural position, suborbicular-cordate when expanded, rounded at the apex, about 2 mm. long and broad near the base; disc with a fleshy semiorbicular callus on each side near the middle. Column smaller than the lip, dilated toward the base.

Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayocc, 2200 meters, epiphytic in dense forest, *Vargas 2543*.

Pleurothallis Smithiana Lindl. Bot. Reg. 29, Misc. 57, no. 79. 1843; Fol. Orch. Pleurothallis 23, no. 133. 1859; Cogn. Martius Fl. Bras. 3, pt. 4: 532, t. 107, fig. 1. 1896. *Humboldtia Smithiana* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant rather small to medium-sized, up to 26 cm. or more high, variable, with a creeping rhizome. Stems rather distant or subcaespitose, usually slender, monophyllous, 4.6–18 cm. or more tall, provided with 2–4 evanescent, tubular sheaths. Leaf erect, narrowly oblong to elliptic-oblong or ovate-oblong, 4.5–10 cm. long, 1–2.4 cm. wide, obtuse, rounded at the sessile base, thickly coriaceous. Inflorescences commonly 1 or 2 (occasionally 4 peduncles are present), racemose, about half as long as the leaf or more, rather densely few-flowered, with the peduncle and rachis up to 5 cm. long. Flowers rather small, bilabiate, densely pubescent without, greenish, white or yellowish lined with lavender or reddish brown. Dorsal sepal oblong, abruptly obtuse to acute, thickened near the apex, up to 9.8 mm. long. Lateral sepals connate into an elliptic-ovate, sharply bidentate lamina which is slightly shorter than the dorsal sepal but twice as broad. Petals less than half as long as the lateral sepals, spatulate, from a slender claw-like base abruptly dilated, subacute to obtuse, with the anterior portion denticulate above. Lip somewhat longer than the petals, oblong-rhombic, cuneate-unguiculate, up to 4.3 mm. long; lamina fleshy, elliptic-ovate in outline, rounded and denticulate at the apex, with a pair of minute, ovate-triangular, erect lobules near the base, bicallose in the middle. Column about equaling the petals, clavate, minutely denticulate above, about 3.3 mm. or less long.

San Martín: San Roque, 1350–1500 meters, in forest, epiphytic on trunk of petrified tree, *Williams 7259*. Also Venezuela, Brazil (type) and Paraguay.

Pleurothallis spathata Schltr. Fedde Repert. 27: 54. 1929.

Plant medium-sized, 18–29 cm. high. Rhizome abbreviated or shortly creeping. Stems caespitose, slender, 5–16 cm. long, 1-leaved at the apex, provided with 2–3 close, tubular, evanescent sheaths. Leaf erect, shortly but distinctly petioled; lamina elliptic-lanceolate to narrowly-elliptic or oblong-lanceolate, acuminate, cuneate below, 7–11 cm. long, 1.1–3.2 cm. wide; petiole up to 1 cm. long. Inflorescence solitary (rarely 2 or 3), lax to flexuous, subequaling or exceeding the leaf, loosely several- to many-flowered, up to 17 cm. long, subtended by a conspicuous conduplicate spathe 1.7–5 cm. long. Flowers rather small, violet or pale greenish brown with red or violet dots, bilabiate. Dorsal sepal narrowly oblong-lanceolate or linear-lanceolate, obtuse to acuminate, 8–10 mm. long. Lateral sepals connate into an elliptic-ovate or "oblong," concave lamina which is slightly shorter but about twice as broad as the dorsal sepal. Petals obliquely linear-lanceolate, gently decurved, acuminate, slightly shorter than the sepals, finely pubescent on the back and on the margins. Lip ovate-lanceolate to oblong-lanceolate, acute, more or less rhombic-dilated below the middle, 5.9–6.8 mm. long, up to 3.2 mm. wide below. Column minute, arcuate, about 2 mm. high.

Junín: Prov. of Tarma, Utcuyacu, 1900 meters, on tree in low forest, *Woytkowski 35356*. Bolivia (type).

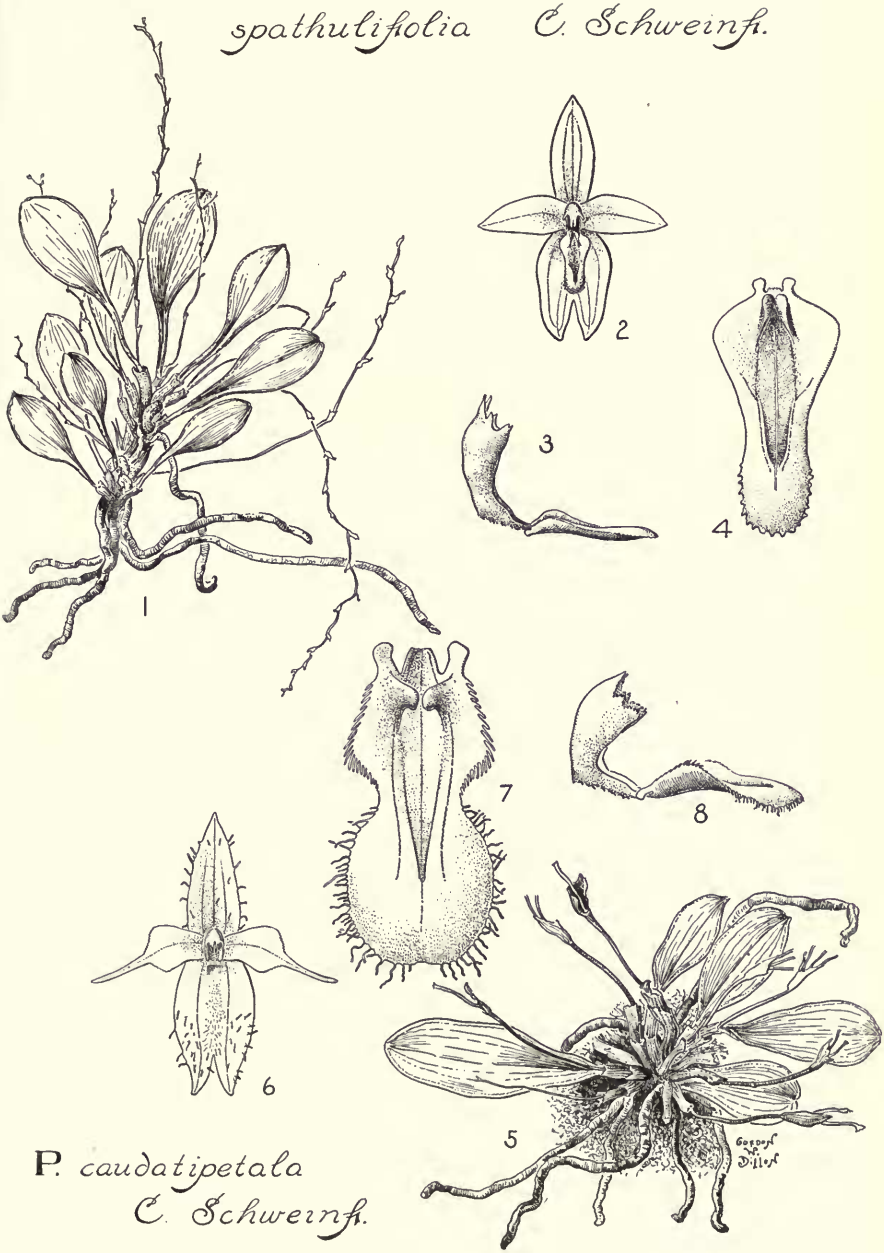
Pleurothallis spathulifolia C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 188, t. 22, figs. 1–4. 1942. Figure 64.

Plant dwarf, with a shortly creeping rhizome. Stems minute, 3–4 mm. long, monophyllous, enclosed by 1–3 loose, tubular, evanescent sheaths. Leaf erect, spatulate, rounded above, with a minutely tridenticulate tip, gradually tapering to a subpetioled base, up to 1.6 cm. long and 6 mm. wide. Inflorescences 1 or 2, capillary, much exceeding the leaves, racemose above, loosely few- (up to 11-) flowered. Flowers small, membranaceous. Dorsal sepal lanceolate or elliptic-lanceolate, acute, concave, about 3 mm. long. Lateral sepals connate almost to the middle, forming an elliptic-ovate lamina with the apices acute, about as long as the dorsal sepal but much broader. Petals shorter than the sepals, obliquely elliptic-lanceolate, acute. Lip ovate-oblong, slightly contracted on each side above the middle, broadly rounded at the apex which is denticulate, subtruncate below, with an inverted V-shaped callus near the base, about 1.8 mm. long. Column nearly as long as the lip, broadly winged, with a 3-lobed, denticulate apex, about 1.4 mm. long.

Ayacucho: Aina, between Huanta and Río Apurimac, 750–1000 meters, epiphyte in open woods, *Killip & Smith 23159*.

FIG. 64. *Pleurothallis spathulifolia* C. Schweinf. 1, plant; × 1½. 2, flower from above, expanded; × 5. 3, column and lip from side; × 10. 4, lip from above; × 20. *P. caudatipetala* C. Schweinf. 5, plant; × 2½. 6, flower from above, expanded; × 5. 7, lip from above, expanded; × 20. 8, column and lip from side; × 10.

PLEUROTHALLIS
spathulifolia C. Schweinf.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Gordon W. Dillon

P. *caudatipetala*
C. Schweinf.

Pleurothallis spiralis (Ruíz & Pav.) Lindl. Gen. & Sp. Orch. (1830) 7. *Humboldtia spiralis* Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 237. 1798. *Stelis spiralis* Pers. Syn. Pl. 2: 524. 1807.

Plant small, funiform, with a long creeping rhizome. Stems very short, concealed by sheaths, apparently appressed to the rhizome, unifoliate. Leaf elliptic-oblong, more or less acute, up to 3 cm. long and 1 cm. wide when expanded. Inflorescence loosely few-flowered, longer than the leaf. Flowers large for the plant, apparently about 1 cm. long. Sepals broadly ovate, subobtuse, the lateral ones connate into a cymbiform lamina. Petals minute, cuneate, truncate and thickened at the apex. Lip similar to the petals, triquetrous.

Huánuco: Huassa-huassi, in rocky places, *Pavón s.n.*

This is an obscure species; judged from the photograph of *Humboldtia spiralis* in the Ames Herbarium, it appears to be allied to *Pleurothallis macrorhiza* Lindl.

Pleurothallis stenopetala Lodd. ex Lindl. Bot. Reg. 24, Misc. 95, no. 182. 1838; Fol. Orch. Pleurothallis 33, no. 200. 1859; Cogn. Martius Fl. Bras. 3, pt. 4: 552, t. 91, fig. 2. 1896. *Humboldtia stenopetala* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant variable, medium-sized to rather large, with a commonly abbreviated rhizome. Stems approximate, monophyllous, 3.5–13.8 cm. high, provided with 2–3 close, tubular, evanescent sheaths of which the uppermost is the longest. Leaf erect, petioled; lamina elliptic to elliptic-oblong or elliptic-obovate, obtuse to broadly rounded at the apex, cuneate at the base, 3.6–9.6 cm. long, up to 3.2 cm. wide; petiole up to 1.8 cm. long. Inflorescence solitary (rarely 2 or 3), commonly about twice as long as the leaf or more, erect to lax, up to 26.5 cm. long, racemose above, subdensely many-flowered. Flowers medium-sized, greenish white, with spreading segments. Dorsal sepal linear-lanceolate, gradually narrowed from a lanceolate, concave base, pubescent within, 7–21 mm. long. Lateral sepals similar, entirely free, with an oblique base. Petals three to many times shorter than the sepals, obliquely oblong, often slightly dilated above the middle, with a rounded apex and a fleshy-thickened mid-nerve forming an apicule. Lip about as long as the petals, recurved with the lower part conduplicate in natural position, ovate or rhombic-ovate in outline, sometimes lightly 3-lobed when expanded, rounded at the apex, cuneate at the base, the flat anterior portion papillose and with irregular margins, about 2.2–3.3 mm. long. Column subequaling the petals, clavate, terminating in a prominent, triangular, concave wing.

Junín: Chanchamayo Valley, 1200 meters, *Schunke s.n.* (Herb. Chicago Nat. Hist. Mus. 571660). A variable species extending throughout northern South America to Bolivia, the type being from Brazil.

Pleurothallis syringifolia Kränzl. Engler Bot. Jahrb. 54, Beibl. 117: 22. 1916.

Plant small to medium-sized, caespitose. Stems approximate, numerous, monophyllous, up to 18 cm. long, spreading, provided with 2 tubular, distant, evanescent sheaths. Leaf horizontally spreading, broadly ovate, deeply cordate at the base, acute or abruptly acuminate, up to 9 cm. long including the basal auricles and 5 cm. wide. Inflorescences fascicled, 1-flowered, abbreviated, numerous, with slender peduncles. Flowers very small, bilabiate, pale green spotted with brown. Dorsal sepal elliptic-ovate ("broadly oblong"), concave, subacute, up to 4.1 mm. long. Lateral sepals connate into a broadly ovate, deeply concave, bidentate lamina which is about as long as the dorsal sepal but twice as wide. Petals narrowly triangular-lanceolate or linear-triangular, a little shorter than the sepals, long-narrowed above to a subacute tip. Lip elliptic-oblong, cymbiform, acute or acuminate, with the lateral margins incurved and fleshy-thickened, a little shorter than the petals, about 3 mm. long. Column minute, stout.

Cajamarca: Prov. of Jaén, on the eastern slope of the Cordillera above Tabaconas (5° 10′–5° 20′ S. Br.), 2400 meters, in sclerophyllous vegetation consisting of shrubs and scattering saplings, *Weberbauer 6302.*

A specimen bearing the type number has been examined.

Pleurothallis Talpinaria Reichb. f. Flora 69: 554. 1886; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 189. 1942. *Talpinaria bivalvis* Karst. Fl. Columb. 1: 153, t. 76. 1859, not *Pleurothallis bivalvis* Lindl. *Pleurothallis trimeroglossa* Schltr. Fedde Repert. Beih. 9: 78. 1921; Mansf. Fedde Repert. Beih. 57: t. 115, nr. 452. 1929. Figure 65.

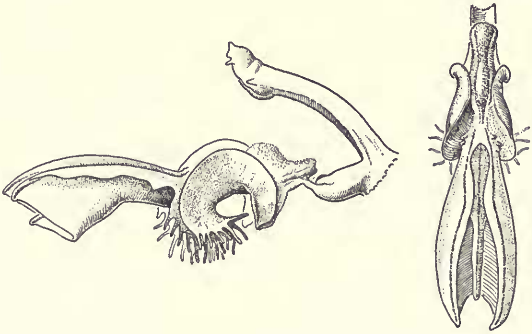

FIG. 65. *Pleurothallis Talpinaria* Reichb. f. Lip and column from side; × 10. Lip from above, natural position; × 10.

Plant small to medium-sized, epiphytic, up to 21 cm. high. Rhizome abbreviated. Stems approximate, numerous, monophyllous, erect or spreading, provided with 2 or 3 tubular, evanescent sheaths, up to 12 cm. long. Leaf erect, petioled; lamina oblong or elliptic-oblong, acute to obtuse, cuneate at the base, 5–10 cm. long, up to 2 cm. wide; petiole short, up to 1.5 cm. long. Inflorescences abbreviated, 1-flowered, fascicled, 1 to several, in the axil of a conspicuous, conduplicate spathe about 1.5 cm. or more long. Flowers medium-sized, bilabiate, reddish. Dorsal sepal oblong-lanceolate, elliptic-lanceolate or ovate-oblong, acute, concave, about 13 mm. long. Lateral sepals entirely connate into an elliptic-oblong or ovate-oblong, obtuse or bidentate, deeply concave lamina which is about as long as the dorsal sepal and slightly wider. Petals linear or elliptic-linear, subacute, about half as long as the sepals or nearly as long. Lip shorter than the sepals, about 8 mm. long including the short fleshy claw, complicated in structure; basal half with a high, semiorbicular, flattened, pubescent keel enclosed by a pair of erect, conduplicate, semiorbicular-lunate lobes which are long-fimbriate on the recurved lower margin; anterior half gently recurved, oblong-elliptic, flabellate when expanded, prominently 3-toothed in front (the middle tooth much shorter), with conspicuous nerves extending to the apex of the teeth. Column slender, arcuate, dilated at the apex, about 5.2 mm. long, with a short, stout foot.

Junín: Prov. of Huancayo, Valley of Pariahuanca, between Panti and Rocchac, 2400 meters, *Weberbauer 6541* (type of *Pleurothallis trimeroglossa*). Also Colombia and Venezuela (*Talpinaria bivalvis*).

Two isotype collections of *P. trimeroglossa* have been examined.

Pleurothallis tentaculata (Poepp. & Endl.) Lindl. Hook. Comp. Bot. Mag. 2: 354. 1836; Fol. Orch. Pleurothallis 20, no. 108. 1859; Cogn. Martius Fl. Bras. 3, pt. 4: 444. 1896. *Restrepia tentaculata* Poepp. & Endl. Nov. Gen. ac Sp. 1: 34, t. 59. 1836. *Humboldtia tentaculata* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant large, caespitose. Stems stout, monophyllous, 17–30 cm. high, provided with 2 long, close, evanescent, tubular sheaths. Leaf erect, lanceolate-oblong or elliptic-oblong, rounded or obtusely acute at the apex, cuneate at the sessile base, 15–20.4 cm. long, up to 3 cm. wide. Inflorescences abbreviated, 1-flowered, 2–4 (rarely 1), with long slender peduncles up to 3.5 cm. long, issuing from a conduplicate spathe up to 2.5 cm. long. Flowers large, bilabiate, with spreading white sepals. Dorsal sepal linear-lanceolate, acute, 2.5–3 cm. long. Lateral sepals entirely connate into a broadly lanceolate, bidentate lamina which is a little longer and broader than the dorsal sepal. Petals filiform from a lightly triangular-dilated base, about as long as the lateral sepals, purple. Lip distinctly 3-lobed near the shortly unguiculate base, dark purple, somewhat longer than the dorsal sepal, 3–3.5 cm. long; lateral lobes minute, auriculiform, transversely reniform, erect; mid-lobe elongate, filiform. Column stout, abbreviated, 5–6 mm. long, with a relatively elongate, 5-dentate wing.

Huánuco: Near Pampayaco (Pampayacu) and Cuchero (Cochero), *Poeppig s.n.*

Pleurothallis tenuifolia C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 102, t. 33. 1951. Figure 66.

Plant medium-sized, caespitose, epiphytic, with an abbreviated rhizome. Stems approximate, numerous, monophyllous, up to 13.5 cm. tall, provided with 3 close,

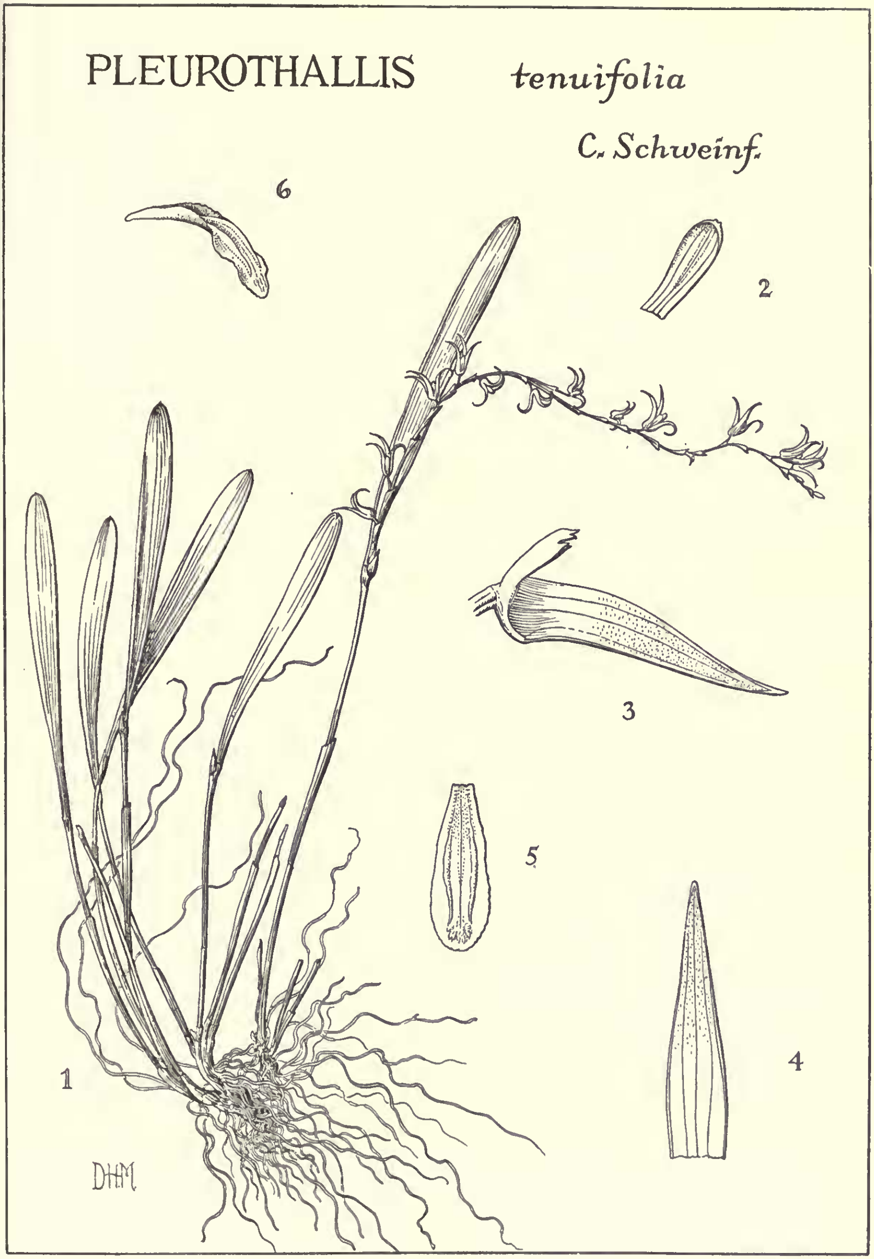
PLEUROTHALLIS tenuifolia
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FIG. 66. *Pleurothallis tenuifolia* C. Schweinf. 1, plant; × ½. 2, petal from front; × 3. 3, lateral sepal and column; × 3. 4, dorsal sepal; × 3. 5, lip, expanded; × 4. 6, lip from side, natural position; × 4.

tubular, evanescent sheaths of which the uppermost is longest and separate. Leaf erect or nearly so, linear, abruptly obtuse to rounded at the apex, gradually narrowed below to an indistinct petiole, 7.5–12 cm. long, up to 1 cm. wide, generally with revolute margins in the dried specimen, thick in texture. Inflorescences usually solitary (rarely 2 peduncles are present), shorter than or exceeding the leaf, loosely many-flowered nearly to the base, erect to arcuate or flexuous, about 17 cm. or less long. Flowers yellow with a white column. Sepals free or nearly so, recurved-spreading above, finely pubescent within on the upper part. Dorsal sepal linear-lanceolate, long-narrowed above, concave below, about 13 mm. long. Lateral sepals obliquely linear-triangular or linear-lanceolate, long-acuminate, about as long as the dorsal sepal and slightly wider. Petals less than half as long as the sepals, narrowly cuneate-oblong, rounded at the cucullate apex. Lip gently recurved in natural position, narrowly obovate-oblong when expanded, obscurely constricted on each side, gradually narrowed below, broadly rounded at the apex, up to 5.9 mm. long and 2 mm. wide, with 2 short parallel keels near the middle. Column small, lightly arcuate, the dilated apex 3-lobed, about 3.9 mm. long, extended into a conspicuous foot.

Junín: Prov. of Tarma, Agua Dulce, 2000 meters, on tree in low highland forest, *Woytkowski 35432.*

Pleurothallis tenuifolia C. Schweinf. var. **longisepala** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 55. 1953.

Plant medium-sized, caespitose. Stems approximate, numerous, very slender, monophyllous, up to 11 cm. long, provided with 2 or 3 close, tubular, evanescent sheaths. Leaf erect or spreading, narrowly linear, abruptly obtuse to subacute, gradually narrowed below to a subpetioled base, up to 13.5 cm. long and 5 mm. wide, with the margins conspicuously revolute. Inflorescence commonly solitary (sometimes remnants of 4 peduncles present), lax or nodding, loosely several- to many-flowered almost to the base, much shorter than the leaf, about 9 cm. or less long. Flowers yellowish white. Sepals free, spreading above, finely papillose within, longer than in the type. Dorsal sepal lanceolate-linear, about 20 mm. long. Lateral sepals very similar, lightly oblique. Petals about a fifth as long as the sepals, cuneate-oblong, subacute. Lip oblong-oblanceolate, obtuse, about 5 mm. long and 1.8 mm. wide above, lightly bicarinate near the middle. Column very small, shorter than the petals, wing-dilated above with a denticulate apex, about 3 mm. high.

Huánuco: Prov. of Pachitea, above La Molina, near Panao, *Asplund 13697.*

Pleurothallis tenuis C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 190, t. 18, figs. 8–14. 1942. Figure 56.

Plant small, caespitose, about 6 cm. tall. Stems spreading, short, simple, up to 3 cm. long, monophyllous, entirely concealed by several (up to 5) lepanthiform sheaths with spreading hispidulous mouth. Leaf erect, elliptic or oblong-elliptic, subacute to rounded at the apex, broadly cuneate below with a very short petiole, up to 2.7 cm. long and 9 mm. wide. Inflorescences 1 or 2, racemose, much surpassing the leaf, capillary, loosely few- (up to 10-) flowered, arcuate, about 5 cm. or less long. Flowers small but large for the plant. Dorsal sepal lanceolate, concave below, rather abruptly long-acuminate or caudate above, about 7 mm. long and 2.3 mm. wide below. Lateral sepals triangular-linear or lanceolate-linear, gradually long-attenuate, free nearly to the base, slightly longer and much narrower than the dorsal sepal. Petals about half as long as the sepals, very obliquely elliptic-lanceolate, acute or acuminate. Lip lanceolate, obtuse at the recurved apex, cuneate at the base, with incurved, indistinct, broadly rounded lobules near the base, about 3.5 mm. long and 1.7 mm. wide below the middle. Column slender, more than half as long as the petals, slightly arcuate, about 2 mm. long.

Cuzco: *Herrera 2157* (Bues coll.) (type).—Ayacucho: Aina, between Huanta and Río Apurimac, 750–1000 meters, epiphyte in dense forest, *Killip & Smith 22539.* (This latter collection, which consists of advanced plants, shows one stem about 4 cm. long, one leaf about 3.5 cm. long and one raceme about 8 cm. long bearing 18 flowers.)

Pleurothallis trachychlamys Schltr. Fedde Repert. Beih. 17: 23. 1922; Ames, Sched. Orch. 7: 31, t. 19, figs. 1–3. 1924.

Plant small, slender, with a long, creeping rhizome. Stems short, slender, commonly subremote, monophyllous, 2.2–6 cm. long (perhaps longer), more or less ascending from a decumbent base, entirely concealed by 3–5 tubular, close, retrorse-hispidulous sheaths. Leaf erect, linear, lanceolate-elliptic or oblong-elliptic, obtuse to subacute, cuneate at the sessile base, 5–7.5 cm. long, up to 1.1 cm. wide. Inflorescences abbreviated, 1-flowered, apparently 1–3. Flowers small, white or greenish-yellow, with recurved-spreading segments. Dorsal sepal ovate-oblong ("lanceolate"), acute to subacute, concave, 2.7–5 mm. long. Lateral sepals similar, ovate-oblong or ovate-lanceolate, oblique, acute. Petals nearly as long as the sepals, lanceolate-oblong from an abruptly dilated basal portion, subacute to obtuse. Lip about half as long as the sepals, oblong-elliptic in outline, with a pair of horizontally spreading, triangular teeth or lobules at about the middle, abruptly acute at the broad apex, about 1.8–2 mm. long. Column minute, wing-dilated above with a sharp tooth on each side.

Loreto: Puerto Arturo, lower Río Huallaga below Yurimaguas, about 135 meters, epiphyte in dense forest, *Killip & Smith 27889.* Also Panama (type) and perhaps Costa Rica (sterile plants only).

Pleurothallis trachysepala Kränzl. Fedde Repert. 1: 178. 1905.

Plant large, caespitose. Stems approximate, slender, monophyllous, 40–45 cm. tall, provided with 2 close, tubular, evanescent sheaths. Leaf erect, ovate or oblong-ovate, abruptly acute or acuminate, deeply cordate at the base, 12–18 cm. long including the basal auricles, up to 8 cm. wide. Inflorescences abbreviated, several, racemose[1] and few-flowered (perhaps 1-flowered). Flowers small, bilabiate, red-brown. Dorsal sepal "oblong," obtuse, about 7 mm. long. Lateral sepals connate into a broadly ovate-oblong, deeply concave lamina which is biapiculate at the apex, about as long as the dorsal sepal but nearly twice as wide. Petals a little shorter than the sepals, linear-lanceolate from a somewhat broader base, acuminate, fimbriate. Lip short-unguiculate, about half as long as the sepals; lamina broadly cordate-ovate, shortly acute, serrate toward the apex, angled on each side at the base. Column short, stout.

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[1] This diagnosis was necessarily drawn from the description, amplified by a photograph of the type collection. Although the inflorescences were described as racemose and few-flowered, suspicion points to the 1-flowered group of which *P. cordata* (Ruíz & Pav.) Lindl. bears the closest similarity.

Cajamarca: Prov. of Hualgayoc, near Chugur northwest of Hualgayoc, 2700–3000 meters, epiphyte in dense moist woods mixed with shrubs, *Weberbauer 4095.*

Pleurothallis trialata Cogn. Martius Fl. Bras. 3, pt. 4: 500, t. 100, fig. 2. 1896. *Lepanthes tricarinata* Barb. Rodr. Gen. & Sp. Orch. Nov. 2: 43. 1882, not *Pleurothallis tricarinata* Poepp. & Endl.

Plant small, up to 15 cm. tall, from a slender, creeping rhizome. Stems approximate to subremote, very short, decumbent below, monophyllous, up to 2 cm. long, concealed by 2 tubular, imbricating, evanescent sheaths. Leaf erect, oblanceolate to linear-oblanceolate, subacute to obtuse, gradually long-narrowed below to a petiole-like base, up to 14.5 cm. long, 8–16 mm. wide. Inflorescence solitary, diffuse or nodding, very loosely 1- to 6-flowered, arising from the stem below the leaf-joint, shorter than to slightly exceeding the leaf, rarely up to 14 cm. long. Flower medium-sized, greenish yellow, with the ovary and sepals prominently wing-carinate. Dorsal sepal narrowly lanceolate, gradually narrowed into a caudate termination, navicular, 10–13 mm. long. Lateral sepals similar to the dorsal sepal, connate to about the middle or above. Petals almost a half to a third as long as the sepals, oblanceolate-oblong or oblong-spatulate, sharply acute to subacute. Lip lanceolate or oblong-lanceolate, with the sides just below the middle erect and forming a pair of indistinct lobules, obtuse to acute, a little longer than the petals, about 4.2–6 mm. long. Column shorter than the petals, stout, clavate.

Huánuco: Muña, about 2100 meters, in rock crevices in dry woods, *Macbride 4038.*—Junín: Colonia Perene, about 680 meters, epiphyte in dense forest, *Killip & Smith 25092.* Brazil (type).

Pleurothallis tricarinata Poepp. & Endl. Nov. Gen. ac Sp. 1: 49, t. 87. 1836; Lindl. Fol. Orch. Pleurothallis 28, no. 166. 1859; Cogn. Martius Fl. Bras. 3, pt. 4: 544. 1896. *Humboldtia tricarinata* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant medium-sized, with a creeping rhizome. Stems approximate, more or less complanate above, monophyllous, up to 8 cm. high, provided below with 2 or 3 tubular, imbricating, evanescent sheaths. Leaf erect or spreading, oval to elliptic-oblong or oblong, 4.5–9 cm. long, up to 2.5 cm. wide, subacute to obtuse, cuneate to subrounded at the sessile base. Inflorescences commonly solitary (rarely 3 fascicled peduncles are present), more or less surpassing the leaf, up to 18 cm. long, densely or rather densely racemose above, several- to many-flowered. Floral bracts conspicuous, dorsally carinate. Flowers medium-sized, erect-spreading, yellow, with the ovary and sepals prominently wing-carinate. Dorsal sepal linear-lanceolate, long-acuminate, navicular, 10–12 mm. long. Lateral sepals connate into a narrowly lanceolate, acute or minutely bidentate lamina which is about as long as the dorsal sepal. Petals oblong or oblanceolate-oblong, sometimes slightly pandurate, sharply acute, lightly oblique, about a third as long as the sepals or more. Lip oblong or ovate-oblong with the lower sides erect, bicarinate near the middle margins, rounded to acute at the apex, about 5–6 mm. long. Column about equaling the petals and a little shorter than the lip, terminating in a rounded, cucullate, denticulate wing.

Cuzco: Prov. of Urubamba, 2500 meters, rare on rocks, *Vargas 3403*.—Huánuco: Near Cuchero (Cochero), on trees, *Poeppig 1733* (type).—Junín: Schunke Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A 56*. Chanchamayo Valley, 1200 meters, *Schunke L*. Same locality, 1600 meters, *Schunke 1091, 1185*. Also Bolivia and Brazil.

Pleurothallis tridentata Kl. Allg. Gartenz. 8: 289. 1840; Lindl. Fol. Orch. Pleurothallis 11, no. 50. 1859; Kränzl. Xen. Orch. 3: 168, t. 298, fig. II, 8–12. 1900. *Humboldtia tridentata* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant small, caespitose, variable. Stems filiform, up to 11.5 cm. high, monophyllous, provided with 2 close, tubular, evanescent sheaths. Leaf ovate to ovate-lanceolate, erect to horizontally spreading, more or less abruptly narrowed to a minutely tridenticulate apex, shallowly cordate at the base, up to 6.2 cm. long and 1.9 cm. wide. Inflorescences abbreviated, 1-flowered several. Flowers very small, bilabiate, yellowish green. Dorsal sepal oblong-ovate to elliptic-obovate, subacute or obtuse, concave, 3–6 mm. long. Lateral sepals entirely connate into a suborbicular-ovate, deeply concave lamina which is about as long as the dorsal sepal but a little wider. Petals linear or oblanceolate-linear, acute, much shorter than the sepals. Lip ovate or broadly ovate in outline, concave with upcurved sides at the base, callose-thickened in the middle, sometimes lightly retuse at the apex, with the central vein clavate near the front, short-unguiculate, about as long as the petals, up to 3.8 mm. long. Column minute, stout.

Huánuco: Prov. of Huánuco, Tingo María, epiphyte on gravelly bank of Río Huallaga, *Asplund 12347*.—Junín: Schunke Hacienda, above San Ramón, 1400–1700 meters, epiphyte in dense forest, *Killip & Smith 24860, 24874*. (The first collection cited presents but one poor flower, but it appears to be the same as the latter one.) Venezuela (type).

Pleurothallis trilineata Lindl. Fol. Orch. Pleurothallis 29, no. 171. 1859. *Humboldtia trilineata* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant medium-sized to large, up to 42 cm. high. Stems approximate, stout, sometimes superposed, monophyllous, provided with 2 or 3 close, tubular, evanescent sheaths, 7–24 cm. long. Leaf erect, narrowly oblanceolate-oblong to linear-oblong (rarely elliptic-oblong), obtuse (and apiculate) to rounded at the apex, cuneate at the base with a more or less distinct short petiole, up to 15 cm. long and 1.6 cm. wide. Inflorescences 1 or 2, commonly more or less surpassing the leaf, up to 19.5 cm. long, racemose, densely many-flowered nearly to the base, with a stout rachis. Flowers small, campanulate, yellow. Dorsal sepal oblong-ovate, concave, subacute, puberulent within toward the margins, up to 7 mm. long, lightly carinate below. Lateral sepals obliquely oblong, more or less connate below, distinctly carinate, subequally long with the dorsal sepal but narrower. Petals about half as long as the sepals, obovate-oblong, rounded at the apex, distinctly 3-nerved. Lip minute, rhombic or rhombic-ovate in outline, 3-lobed in the middle with erect semiobovate lateral lobes which are callose in front, obtuse, cuneate at the base, traversed by 3 dark lines, about 2.1 mm. long. Column minute, cucullate above, about half as long as the petals.

Peru: Habitat not recorded, ex Hooker (type).—Ancash: Prov. of Bolognesi, Chupa, stone slope of mountain near Aquia, 3200–3250 meters, *Ferreyra 7537.*—Apurimac: Prov. of Abancay, Cachora, Rosaspata, 2800 meters, on rocks, *Vargas 9106.*—Huánuco: Mito, about 2760 meters, on ledges of shrubby hillsides, *Macbride 3285.*—Junín: Pasco, Salcachupan y Cerro de Pasco, 3500 meters, in low forest on mountain slope, *Ferreyra 6608.*

Pleurothallis Trulla Reichb. f. & Warsc. Bonpl. 2: 114. 1854; Lindl. Fol. Orch. Pleurothallis 31, no. 187. 1859. *Humboldtia trulla* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant apparently large. Stem stout, obtusely four-angled in section, monophyllous, (incomplete in the type). Leaf elliptic-oblong, 7.6–12.8 cm. long, up to 3.9 cm. wide, acute, cuneate at the sessile base. Inflorescences 2–3, much surpassing the leaf, up to 22 cm. long, racemose above the middle, loosely up to 13-flowered. Flowers small, nodding, secund. Perianth little open, bilabiate, membranaceous. Dorsal sepal oblong, acute, concave, about 10 mm. long. Lateral sepals connate into an ovate-oblong, bidentate lamina which is deeply concave at the base where it forms a prominent mentum, about as long as the dorsal sepal. Petals spatulate-oblanceolate or cuneate-oblong, commonly broadly rounded at the apex, markedly shorter than the sepals. Lip shorter than the petals, recurved, from a long, slender claw abruptly dilated into a suborbicular-ovate lamina which is cordate at the base, obtuse or abruptly acute or apiculate; disc provided with a high intramarginal keel on each side. Column slender, cucullate at the apex, about half as long as the petals, provided with a conspicuous foot.

Peru: Habitat not recorded, *Warscewicz s.n.*

In the Ames Herbarium there is a drawing of this species with floral analysis, from the Reichenbach Herbarium.

I have lately had the opportunity of seeing the type specimen.

Pleurothallis tunguraguae Lehm. & Kränzl. Engler Bot. Jahrb. 26: 439. 1899.

Plant large, with an abbreviated rhizome, about 49 cm. or less tall. Stems slender, approximate, with 2 or 3 close, tubular, evanescent sheaths, up to 30 cm. tall, monophyllous. Leaf erect or nearly so, distinctly petioled; lamina elliptic-oblong, acute or obtuse, cuneate below, up to 16 cm. long, 2.5–3.5 cm. wide; petiole slender, 2–3 cm. long. Inflorescences 1–5, more or less shorter than the leaf, subdensely many-flowered to the base, enclosed at the base by a conduplicate spathe up to 1.5 cm. long. Flowers small, campanulate, white or yellowish white. Sepals ciliolate. Dorsal sepal ovate-lanceolate, acuminate, concave, up to 5.5 mm. long. Lateral sepals narrowly triangular-lanceolate, carinate, slightly longer and much narrower than the dorsal sepal, connate below the middle. Petals linear-lanceolate or narrowly oblong-lanceolate, acuminate, slightly exceeding half of the sepals. Lip minute, sigmoid when viewed from the side, abruptly 3-lobed near the middle, shortly and abruptly clawed, rhombic when expanded, 1.8–2.1 mm. long and somewhat narrower when spread out; lateral lobes obliquely and broadly obtriangular, upcurved; mid-lobe subequal or larger, ovate, acute, thickened in the middle. Column abbreviated, stout, shorter than the lip.

Amazonas: Prov. of Bongara, on ridges above Quebrada Santa Rosa, across the northeast end of Lake Pomocochas, 2430 meters, epiphyte in mountain rain-forest, *Hodge 6154*. Ecuador (type).

I have examined isotype material of this species.

Pleurothallis undulata Poepp. & Endl. Nov. Gen. ac Sp. 1: 48. 1836; Lindl. Fol. Orch. Pleurothallis 10, no. 46. 1859; Cogn. Martius Fl. Bras. 3, pt. 4: 452. 1896. *Humboldtia undulata* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891.

Plant rather large, with a creeping, twisted, many-jointed rhizome. Stems caespitose, numerous, slender, monophyllous, 9–18 cm. tall, erect, provided with 2 long-tubular, evanescent sheaths. Leaf ovate-lanceolate, rather long-acuminate, deeply cordate at the sessile base, 6–9.5 cm. long, 2–3 cm. wide, horizontally spreading. Inflorescences abbreviated, 1-flowered, few. Flowers small, yellow, membranaceous, bilabiate. Dorsal sepal triangular-lanceolate or oblong-lanceolate, acute, 8–9 mm. long. Lateral sepals entirely connate into a similar but broader, concave lamina. Petals subulate, very acute, finely puberulent, about half as long as the sepals. Lip a little shorter than the petals, very shortly and narrowly clawed, oblong, obtuse or acute, lightly sagittate at the base, fleshy, finely papillose on the margin, a little shorter than the petals, about 3.5 mm. long. Column minute, stout.

Huánuco: Near Pampayaco (Pampayacu) and Cuchero (Cochero) on trees, *Poeppig 1431* (type). Also Venezuela and Brazil.

Pleurothallis vaginata Schltr. Fedde Repert. Beih. 19: 197. 1923; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 4: 98. 1937. *Pleurothallis umbraticola* Schltr. Fedde Repert. 27: 56. 1929.

Plant medium-sized to large, variable, up to 44 cm. high, with a stout creeping rhizome (often not evident in the dried specimen). Stems monophyllous, up to 30 cm. high, provided near the base with 1–3 short, tubular sheaths and near the middle or above with a conspicuous, loose, tubular-infundibuliform, membranaceous sheath. Leaf erect, shortly petioled; lamina broadly ovate to elliptic or oval (rarely oblong-ovate), acute or acuminate, rounded or broadly cuneate at the base, 6–17 cm. long including the short petiole, 2.7–9 cm. wide. Inflorescences short, racemose, 1 to numerous, about half as long as the leaf or less, loosely or subdensely several- (up to 10-) flowered. Flowers small, urceolate, green to yellow, maroon or green and violet. Dorsal sepal elliptic-oblanceolate to elliptic-obovate (rarely oblong-lanceolate), obtuse to acute, concave below, usually flat and recurved above, pubescent within on the anterior half, up to 9 mm. long. Lateral sepals obliquely oblong-lanceolate or elliptic-lanceolate, subacute or acute, more or less connate (to the middle or above), pubescent within, forming a prominent mentum with the column-foot, a little smaller than the dorsal sepal. Petals about half as long as the sepals, obliquely cuneate-spatulate, more or less acute at the subtruncate or broadly rounded apex. Lip arcuate with erect sides and subequaling the petals in natural position, obovate in outline when expanded, about 4 mm. or less long; lower part subquadrate, like a claw; anterior part ovate, obtuse, with a pair of intramarginal keels. Column small, subequaling the petals, wing-dilated above, with a trilobulate denticulate apex, extended into a conspicuous foot.

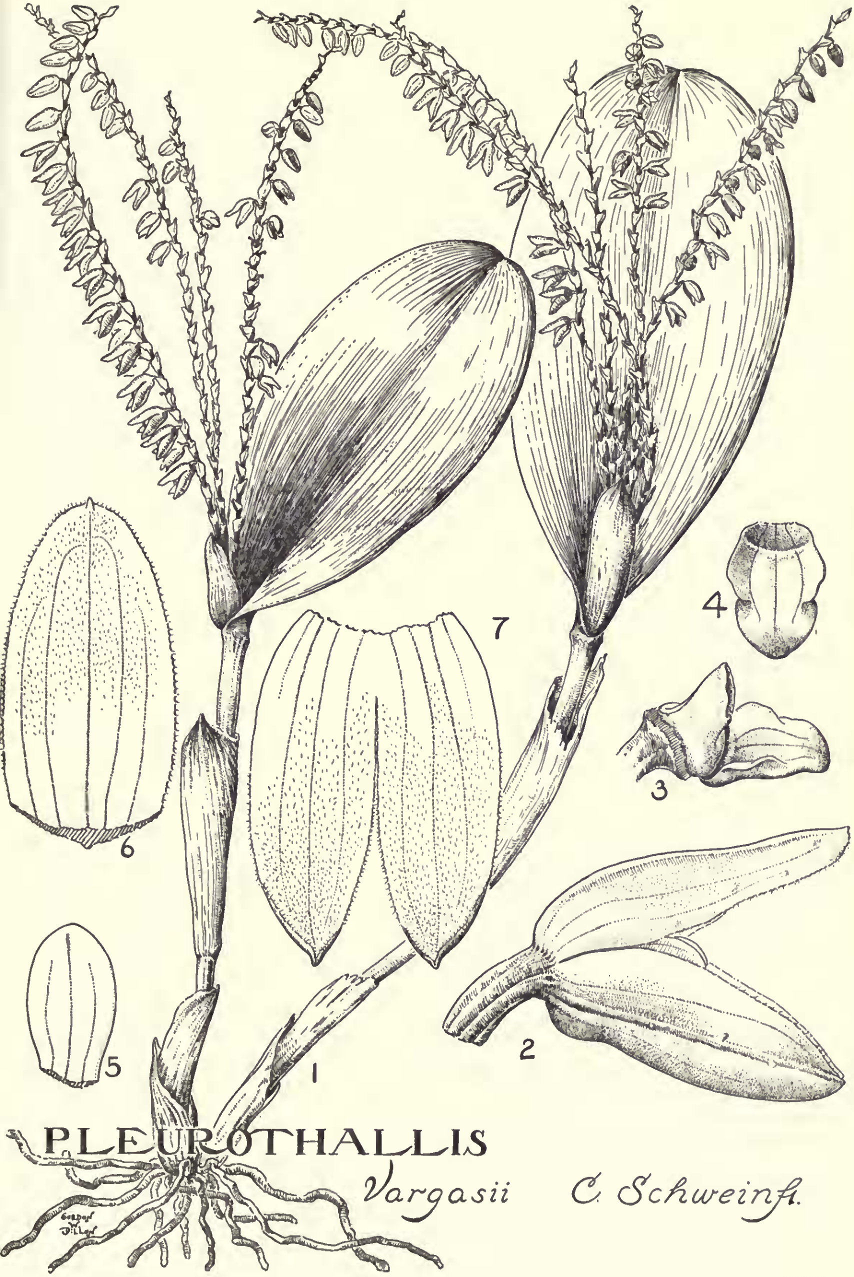
Loreto: Pumayacu, between Balsapuerto and Moyobamba, 600–1200 meters, epiphyte in forest, *Klug 0.7*. Also in Costa Rica (type of *P. vaginata*), Dominican Republic, Guadeloupe, Venezuela, British Guiana, Colombia and Bolivia (type of *P. umbraticola*).

Pleurothallis Vargasii C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 192, t. 23. 1942. Figure 67.

Plant large and robust, probably caespitose (lower portion incomplete in our specimens). Stems stout, monophyllous, up to over 19 cm. tall, provided with 2 or 3 loose, tubular sheaths of which the uppermost is largest, separate and prominent. Leaf erect, oblong-elliptic to oval or obovate-elliptic, rounded, obtuse or retuse at the apex, cuneate at the sessile, scarcely petioled base, 11.4–22.3 cm. long, up to 8.5 cm. wide. Inflorescences 4–7, erect or nearly so, shorter than to slightly surpassing the leaf, densely many-flowered nearly to the base, subtended by a large conduplicate spathe up to 4 cm. long. Flowers small, campanulate, white, subfleshy. Dorsal sepal ovate-oblong, rounded and apiculate above, concave, finely pubescent within, about 10 mm. long. Lateral sepals obliquely oblong-lanceolate, acute, connate near the base, finely pubescent within, slightly shorter and much narrower than the dorsal sepal. Petals about half as long as the sepals, elliptic-obovate, rounded at the apex. Lip smaller than the petals, oval-ovate in outline when expanded, broadly rounded at the apex, with a pair of incurved semiobovate lobules in the middle, about 3.7 mm. long. Column minute, stout, dilated below.

Apurimac: Prov. of Abancay, "bosques altos de Ampay," 3700 meters, epiphyte and also on the ground, *Vargas 1075* (type). Same locality, woods in shade, 3550 meters, *Vargas 2049*.

Pleurothallis velaticaulis Reichb. f. Linnaea 22: 824. 1849. *Humboldtia velaticaulis* O. Ktze. Rev. Gen. Pt. pt. 2: 668. 1891. *Pleurothallis Pittieri* Schltr. Fedde Repert. 3: 247. 1907.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PLEUROTHALLIS
Vargasii C. Schweinf.

FIG. 67. *Pleurothallis Vargasii* C. Schweinf. 1, plant; × ½. 2, flower and ovary from side; × 5. 3, column and lip from side; × 5. 4, lip from above; × 5. 5, petal; × 5. 6, dorsal sepal; × 5. 7, lateral sepals, expanded; × 5.

Plant extremely variable, small to large. Rhizome abbreviated. Stems approximate, slender to stout, often superposed and proliferating, monophyllous, up to 41 cm. tall, provided with 2 to 3 tubular, evanescent, loose sheaths of which the uppermost is largest and usually prominent. Leaf erect or spreading, gradually tapering into a distinct petiole, rarely subsessile; lamina elliptic-oblong or lanceolate-elliptic to oval, 4–30 cm. long, 1–9.7 cm. wide, obtuse to rounded at the apex, cuneate at the base; petiole almost wanting to 7 cm. long, channelled. Inflorescences 1–numerous, suberect to diffuse or nodding, much shorter than to surpassing the leaf, up to 20 cm. long, rather densely many-flowered, with the rachis commonly slender. Flowers small, campanulate, greenish (sometimes with maroon stripes), dull yellow to brownish yellow or yellow-orange. Dorsal sepal ovate, or oblong-ovate to lanceolate, acute, concave, more or less minutely pubescent within, lightly carinate, 3.1–5.4 (rarely 7) mm. long. Lateral sepals obliquely oblong-lanceolate, acute, often connate to about the middle, navicular, carinate, minutely pubescent within, subequally long but much narrower than the dorsal sepal. Petals much smaller than the sepals, oblong-obovate to oblong-spatulate or oblong, rounded to rarely subacute at the apex, 1-nerved. Lip shorter than the petals, 3-lobed near the middle with erect-incurved lateral lobes, broadly rounded to acute at the apex, cuneate at the base, with a more or less conspicuous transverse ridge in front of the concave base, up to 2 mm. long and wide when expanded; lateral lobes semiobovate, lightly emarginate, terminating in front within the anterior portion; mid-lobe ovate to semiorbicular. Column minute, with a cucullate wing.

Amazonas: Prov. of Bongara, northeast of Pomocochas, on ridge above Quebrada Santa Rosa, 2400 meters, epiphyte in mountain rain-forest, *Hodge 6153.*—Apurimac: Prov. of Abancay, Cachora, Rosaspata, 2800 meters, on rocks, *Vargas 9106.* Prov. of Andahuaylas, quebrada north of Chincheros, 2800 meters, in rock crevices, *Stork & Horton 10766* (stems proliferous).—Cuzco: *Herrera 2155* (Bues coll.) (lip short and broad). Ollantaitambo, "Huacanquito," about 3000 meters, *Cook & Gilbert 797* (stems proliferous). Ollantaitambo, Valley of the Urubamba, 2800 meters, *Herrera 3496* (stems proliferous). Prov. of Paucartambo, near Pillahuata, 3200 meters, in rain-forest, *Vargas 3655.* Prov. of Quispicanchis, between Ttío and Murayaca (Marcapata), 1960 meters, *Vargas 3141.*—Huánuco: Chasquí, about 3200 meters, in shallow soil on sunny rocks, *Macbride & Featherstone 1752.* Huacachi, near Muña, about 2000 meters, "rock pockets," *Macbride 3873.*—Junín: Chanchamayo Valley, 1200 meters, *Schunke s.n., 1332.* Same locality, 1600 meters, *Schunke 1694.* Prov. of Tarma, Agua Dulce, 1900 meters, on tree in shady forest, *Woytkowski 35421, 35422.*—San Martín: Zepelacio, near Moyobamba, about 1100 meters, epiphyte in mountain forest, *Klug 3623.* Also West Indies and Costa Rica (type of *P. Pittieri*) to Panama, Venezuela (type of *P. velaticaulis*), Ecuador and Peru.

Pleurothallis verruculosa Kränzl. Fedde Repert. 1: 177. 1905.

Plant medium-sized, epiphytic. Rhizome abbreviated. Stems caespitose, numerous, monophyllous, gradually dilated and laterally flattened upward, up to 15 cm. long, provided with 2 tubular, evanescent sheaths near the base. Leaf oblong-ovate to oblong-lanceolate or narrowly oblong, erect or spreading, subacute to obtuse, rounded or broadly cuneate at the base, fleshy, 4.5–7.6 cm. long, up to 1.8 cm. wide. Inflorescences 1 to several, very short (not equaling half of the leaf), racemose, densely few-flowered, commonly lax or nodding. Flowers small, bilabiate, fleshy, brown, often striped with red, more or less finely papillose on both surfaces. Dorsal sepal oblong-obovate or oblong-oblanceolate ("ligulate"), subacute, concave below, about 5 mm. long. Lateral sepals shorter than the dorsal sepal, obliquely semielliptic and incurved, acute, more or less connate into a suborbicular lamina which is sharply bidentate above. Petals about half as long as the dorsal sepal, obliquely cuneate-spatulate ("oblong"), obtuse, with a short, fleshy, indistinct intramarginal keel on the side near the dorsal sepal. Lip very fleshy, arcuate with erect-incurved sides in natural position, obovate in outline, a little shorter than the petals, subacute to obtuse, from a short claw dilated into a subquadrate-ovate lamina, obscurely lobulate below, about 2 mm. long. Column subequaling the petals, arcuate, abruptly dilated into a cucullate wing which is denticulate above.

Cajamarca: Prov. of Chota, mountains west of Huambos, 3100–3200 meters, in sclerophyllous vegetation consisting of shrubs and saplings, *Weberbauer 4180* (type).—Huánuco: Yanano, about 1800 meters, on mossy tree, *Macbride 3842*.

In the Ames Herbarium there is a photograph of the type.

Pleurothallis xanthochlora Reichb. f. Linnaea 22: 823. 1849; Lindl. Fol. Orch. Pleurothallis 7, no. 26. 1859; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 178. 1944. *Humboldtia xanthochlora* O. Ktze. Rev. Gen. Pl. pt. 2: 668. 1891. *Pleurothallis huanucoensis* Schltr. Fedde Repert. Beih. 9: 75. 1921; Mansf. Fedde Repert. Beih. 57: t. 114, nr. 448. 1929.

Plant large, epiphytic or terrestrial, with a creeping rhizome. Stems subremote, monophyllous, up to 49.5 cm. tall, provided at the base with 1 or 2 small, tubular, evanescent sheaths and near or above the middle with a longer, tubular, evanescent sheath. Leaf erect or spreading, oblong-elliptic to oval or ovate-elliptic ("oblong"), acute or subacute (rarely short-acuminate), cuneate at the sessile (sometimes subsessile) base, 14–23 cm. long, up to 8.8 cm. wide. Inflorescences 1–5, elongate, usually much surpassing the leaf, racemose, densely or subdensely many-flowered above, erect or lax. Flowers very small, bilabiate, greenish white or white to yellow. Sepals deeply concave. Dorsal sepal ovate or lanceolate-ovate, acute or acuminate, 4–7 mm. long. Lateral sepals entirely connate into an apically narrowed, obtuse lamina which is very similar to the dorsal sepal. Petals linear or linear-lanceolate, acute or acuminate, subequaling or slightly shorter than the sepals. Lip much shorter than the petals, ovate or lanceolate-ovate, acute or acuminate, with the upcurved sides of the basal portion broadly rounded and more or less lobuliform above, with denticulate anterior margin, 1.75–3.7 mm. long; disc with a small, central, transverse thickening near the base. Column small, more than half as long as the lip.

Cuzco: Prov. of Convención, "alturas de Pintobamba," 2700 meters, in woods, *Vargas 3541*. Prov. of Convención, Potrero, Cosqueñayocc, 1400 meters, *Vargas 8266*. Prov. of Convención, Hda. "Amaibamba," 1800 meters, in humus of wooded slope, *Vargas 3468*. Prov. of Convención, Hda. Potrero, Sapan-Sachayocc, 2200 meters, epiphyte in forest, *Vargas 2540*.—Huánuco: Near Monzón ("Monson"), 1000–1200 meters, between stones, *Weberbauer 3491* (type of *P. huanucoensis* Schltr.).—Junín: La Merced, about 600 meters, on tree trunk, *Macbride 5533*. Pichis Trail, Eneñas, 1600–1900 meters, on base of tree trunk in dense forest, *Killip & Smith 25662* (entire lip).—San Martín: San Roque, 1350–1500 meters, in forest, *Williams 7066*. Zepelacio, near Moyobamba, 1200–1600 meters, in mountain forest, *Klug 3422*. Venezuela (type of *P. xanthochlora*).

LEPANTHOPSIS (Cogn.) Ames

Small or minute epiphytes. Stems caespitose, unifoliate at the apex, several-jointed, the members being enveloped by close, tubular sheaths with a spreading hispid mouth. Leaf suborbicular to elliptic-oblong, acute to rounded at the apex, very shortly petioled. Inflorescences terminal, axillary, one to several, racemose above, densely several- to many-flowered, often secund. Flowers very small, membranaceous. Parts of the perianth wide-spreading. Sepals subequal, more or less connate, the lateral sepals very deeply connate. Petals much smaller, orbicular to oblong-elliptic. Lip sessile at the base of the column, simple, commonly larger than the petals. Column minute, footless. Anther terminal, opercular, incumbent. Pollinia 2, waxy, subpyriform.

Lepanthopsis floripecten (Reichb. f.) Ames, Bot. Mus. Leafl. Harvard Univ. 1, no. 9: 11. 1933. *Pleurothallis floripecten* Reichb. f. Bonpl. 2: 25. 1854. *Lepanthes secunda* Barb. Rodr. Gen. & Sp. Orch. Nov. 2: 70. 1882. *Pleurothallis unilateralis* Cogn. Martius Fl. Bras. 3, pt. 4: 592, t. 122, fig. 2. 1896. Figure 68.

Plant very small, variable, 3–15 cm. tall. Stems caespitose, ascending, up to 7 cm. long, unifoliate at the apex, entirely concealed by 2 to 7 close, tubular sheaths

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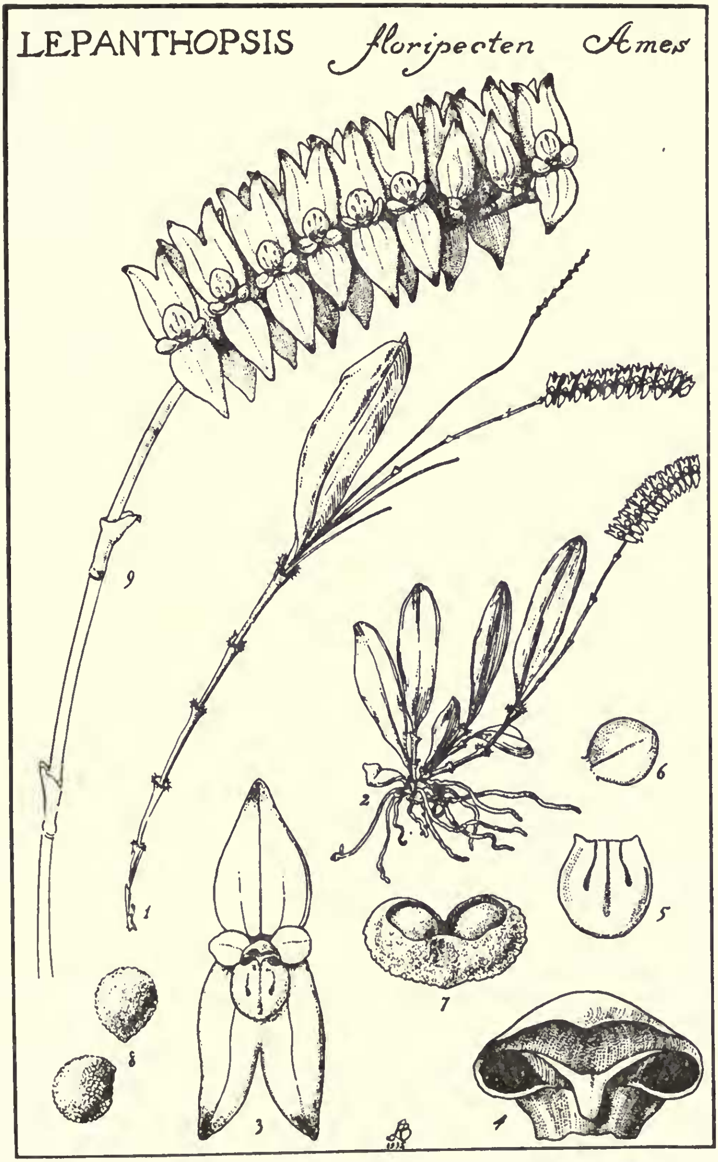
FIG. 68. *Lepanthopsis floripecten* (Reichb. f.) Ames. 1, secondary stem, with four peduncles, showing that the stem elongates as the successive peduncles are produced; × 1. 2, habit, showing that the stems are comparatively short when the first peduncle is produced; × 1. 3, flower, much enlarged. 4, column, much enlarged; the heavily stippled areas represent the lateral stigmas. 5, lip, much enlarged. 6, petal, much enlarged. 7, anther, much enlarged, showing the under side. 8, pollinia, much enlarged. 9, peduncle and raceme, much enlarged.


LEPANTHOPSIS floripecten Ames
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with a spreading hispid mouth. Leaf erect, suborbicular-oval to elliptic-oblong, obtuse to broadly rounded at the apex, very shortly petioled, 1.5–3.9 cm. long, up to 1.2 cm. wide. Inflorescences terminal, axillary, one to several, filiform, up to 10 cm. long, racemose above; raceme densely many-flowered, up to 2.5 cm. long, with secund or unilateral flowers. Flowers very small, membranaceous, white or pale yellow. Sepals horizontally spreading. Dorsal sepal ovate, narrowed to an acute or obtuse apex, about 2–3 mm. long. Lateral sepals connate into an oblong-subquadrate lamina which is bidentate at the apex, somewhat longer than the dorsal sepal and either slightly narrower or broader. Petals many times smaller than the sepals, suborbicular-ovate, rounded to subacute at the apex. Lip similar to the petals but larger, suborbicular or round-ovate, broadly rounded at the apex, about 1 mm. long and wide. Column minute, broad, dilated above, with widely separated stigmas.

Cuzco: Prov. of Convención, Sachayocc, 1800 meters, epiphytic, *Vargas 6297*. Also Honduras, Costa Rica, Colombia (fide Schlechter), Venezuela (type of *Pleurothallis floripecten*) and Brazil (type of *Lepanthes secunda* and *Pleurothallis unilateralis*).

BRACHIONIDIUM Lindl.

A small genus of inconspicuous, commonly epiphytic orchids extending from Costa Rica, the West Indies and northern South America southward to Bolivia and perhaps Brazil.

Plants small, with an elongate, often branching primary stem or rhizome. Secondary stems approximate to remote, abbreviated, concealed by 2 or more imbricating, tubular, scarious sheaths, 1-leaved at the apex. Leaf shortly petioled; lamina elliptic, oblong-elliptic, elliptic-lanceolate or oblong-ovate. Peduncle 1-flowered, equaling to much surpassing (rarely shorter than) the subtending leaf, filiform, commonly provided near the middle with a tubular or infundibuliform sheath. Flower small to rather large. Perianth parts spreading. Sepals abruptly acuminate to attenuate or caudate, the lateral ones being entirely or mostly connate. Petals similar to the sepals, but smaller. Lip very small, usually sessile, simple to 3-lobed, often transverse. Column abbreviated, footless, with an apical pair of sharp teeth or arms. Pollinia 6, slenderly oblong-pyriform.

Brachionidium serratum Schltr. Fedde Repert. 9: 164. 1911.

Plant epiphytic, very small, with a more or less elongate, creeping, primary stem which is concealed by close sheaths. Secondary stems abbreviated, 1-leaved, scarcely 5 mm. long. Leaf elliptic, erect, subobtuse with an unequally bilobulate apex, 7–16 mm. long, 3–4 mm. wide. Peduncles terminal, filiform, 1-flowered, commonly naked. Flower becoming purple, soon nodding. Dorsal sepal ovate-lanceolate, apiculate, unicarinate on the back, 8 mm. long and half as wide. Lateral sepals entirely connate into an ovate, subobtuse lamina which is a little longer and broader than the dorsal sepal. Petals obliquely lanceolate, acuminate, densely serrate, subequaling the dorsal sepal. Lip from a quadrate-unguiculate base broadly rhombic, shortly apiculate, the sides obtuse-angled, adorned in the middle with a rounded callus, about 3.5 mm. long and broad. Column short, 2-armed above. Anther cucullate-cordate; pollinia 6, obliquely clavate.

Peru: Near Cochabamba, *Filomeno s.n.*

OCTOMERIA R. Br.

A rather small genus of epiphytes confined to the American tropics, with usually abbreviated, rarely long-creeping, rhizomes. Stems more or less elongate, monophyllous at the apex, concealed by one or more tubular, evanescent sheaths. Leaf erect, sessile or short-petioled, oblong-elliptic to linear or subterete. Inflorescences abbreviated, fascicled, 1-flowered, 1 to numerous. Flowers small to medium-sized, campanulate to urceolate. Sepals and petals subequal or the latter a little shorter, commonly free. Lip much shorter than the other segments, commonly with a pair of small lateral lobes below the middle. Column much shorter than the petals, wingless, provided with a short foot. Pollinia 8, four in each chamber of the 2-celled anther.

Plants having a close outward appearance to some species of *Pleurothallis*, but readily distinguished by having 8 pollinia, rather than 2 or 4. Moreover, this genus differs from most species of *Pleurothallis* by having the petals subequal to the sepals.

A1. Leaves triquetrous-subulate to subterete; lateral lobes of the lip long and narrow...I
A2. Leaves flat, linear to narrowly elliptic; lateral lobes of the lip short and broad...1
Ia. Stems terete or subterete; mid-lobe of the lip 3-lobed, retuse...*O. scirpoidea*
Ib. Stems complanate; mid-lobe of the lip simple, not retuse.....*O. complanata*
1a. Flowers relatively large, sepals 12 mm. or more long; leaves usually not thickly fleshy, but more or less coriaceous.............................2
1b. Flowers relatively small, sepals 9.8 mm. or less long; leaves thickly fleshy..3
2a. Sepals lanceolate-oblong; lip not prominently auriculate at the base; leaves 15.7 cm. or less long.................................*O. boliviensis*
2b. Sepals elliptic-lanceolate; lip rather prominently auriculate at the base; leaves up to 27.6 cm. long including the petiole.....*O. boliviensis* var. *grandifolia*
3a. Lateral sepals connate to about the middle; mid-lobe of the lip subquadrate-ovate.......................................*O. semiconnata*
3b. Lateral sepals free or nearly so; mid-lobe of the lip not subquadrate-ovate..4
4a. Leaves dull on the upper surface; lateral lobes of the lip near the middle, broadly falcate-oblong and porrect; mid-lobe rhombic-obovate. *O. surinamensis*
4b. Leaves shining on the upper surface; lateral lobes of the lip near the base, rounded-auriculate and spreading; mid-lobe ovate or ovate-oblong. *O. erosilabia*

Octomeria boliviensis Rolfe, Bull. N. Y. Bot. Gard. 4: 452. 1907.

Plant medium-sized, with a creeping rhizome. Stems subremote, ascending from a decumbent base, slender or rather stout, 4- to 5-jointed, up to 20 cm. long, mostly concealed by 5 to 6 evanescent, tubular sheaths. Leaf erect or suberect, short-petioled; lamina lanceolate-oblong to oblong-elliptic, more or less narrowed above to an obtuse apex, cuneate at the base, 7–14 cm. long, 9–19 mm. wide; petiole slender, up to 1.7 cm. long. Inflorescences abbreviated, 1-flowered, several in a cluster. Flowers relatively large, membranaceous, white. Dorsal sepal lanceolate-oblong, acute, concave at the base, about 13 mm. long. Lateral sepals free, similar to the dorsal sepal but a little shorter and broader. Petals similar to the dorsal sepal but a little smaller. Lip more than half as long as the dorsal sepal, elliptic-oblong in outline, pandurate, sharply 3-lobed in the middle, truncate at the base, about 7.5 mm. long; lateral lobes small, rounded, porrect; mid-lobe much larger, rhombic-ovate, broadly truncate in front, with erose margins; disc with a pair of short keels extending from the center of the lateral lobes to the base of the mid-lobe. Column slender, about one third as long as the dorsal sepal, with a short foot.

Junín: Chanchamayo Valley, 1600 meters, *Schunke 1645*. Bolivia (type).

Octomeria boliviensis Rolfe var. **grandifolia** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 194. 1942.

Plant variable. Stems approximate to subremote, 7.5–42.3 cm. long. Leaf short-petioled; lamina elliptic-linear to narrowly elliptic-lanceolate, 11.5–26.4 cm. long, up to 3.7 cm. wide. Flowers slightly smaller than those of the type, cream-color, yellow and dark red or violet. Sepals elliptic-lanceolate, all similar, about 12 mm. long. Petals similar to the sepals but slightly smaller, somewhat oblique. Lip about 7 mm. long, sharply 3-lobed in the middle; lower portion pandurate with a more or less auriculate base; lateral lobes erect, small, obliquely semiovate, rounded at the apex, somewhat narrower than those of the type; mid-lobe rhombic-ovate, more or less sharply 3-lobulate at the truncate apex; disc with a pair of keels similar to those of the type.

Loreto: Pumayacu, between Balsapuerto and Moyobamba, 600–1200 meters, epiphyte in forest, *Klug 0.15* (type).—San Martín: Zepelacio, near Moyobamba, about 1100 meters, in mountain forest, *Klug 3637*.

Octomeria complanata C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 195, t. 24. 1942. Figure 69.

Plant small, caespitose. Stems numerous, crowded, slender, complanate, monophyllous, up to 8.5 cm. long, with several tubular, imbricating, evanescent sheaths near the base. Leaf triquetrous-subulate, appearing like a continuation of the stem, more or less arcuate in the dried specimen, up to 4 cm. long. Inflorescences abbreviated, apparently 1-flowered, several in a cluster. Flowers small, membranaceous, brown-red. Dorsal sepal lanceolate-oblong to elliptic-lanceolate, acute, concave, up to 5.3 mm. long. Lateral sepals narrowly oblong or oblong-lanceolate, navicular, subacute, somewhat longer and narrower than the dorsal sepal. Petals obliquely oblong-lanceolate or elliptic-lanceolate, shorter than the sepals. Lip nearly three times shorter than the lateral sepals, about 2.1 mm. long, with the sides of the lower portion incurved in natural position, deeply 3-lobed at the base,

OCTOMERIA

complanata C. Schweinf.

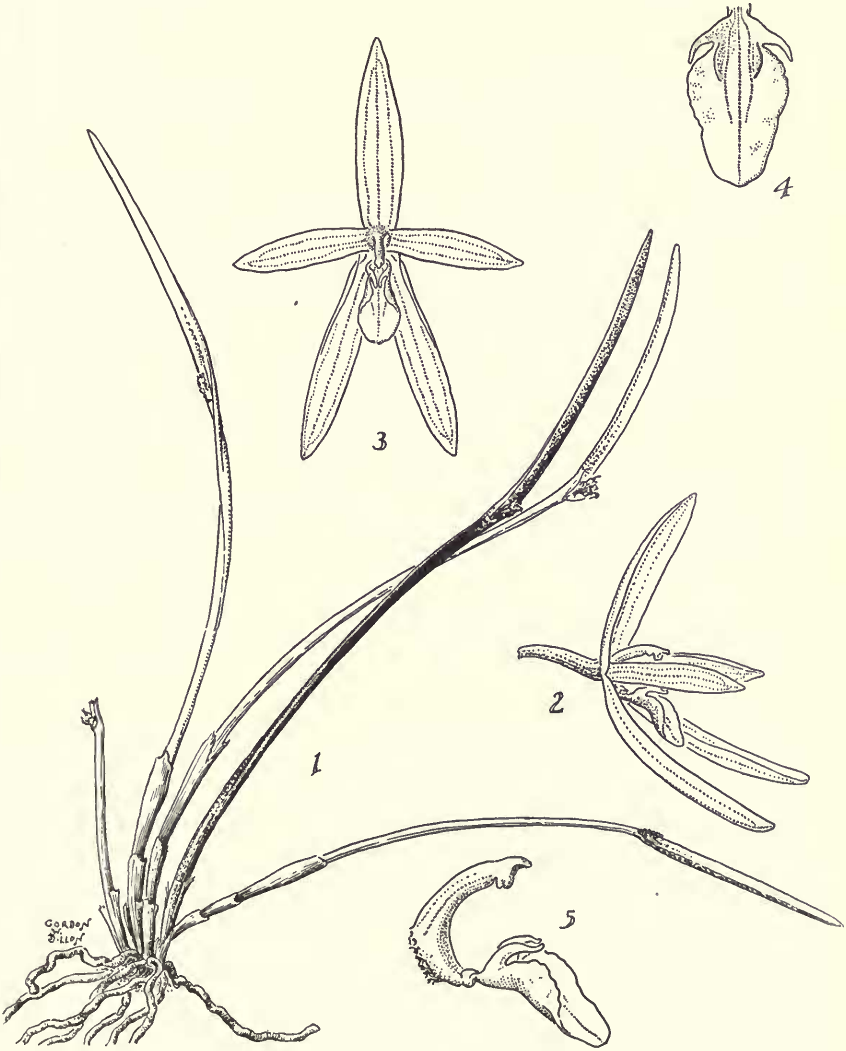


FIG. 69. *Octomeria complanata* C. Schweinf. 1, plant; × 1. 2, flower and ovary from side; × 5. 3, flower from above, expanded; × 5. 4, lip from above, expanded; × 10. 5, column and lip from side; × 10.

oblong-ovate in outline when expanded, rounded at the apex, broadly rounded at the base; lateral lobes very small, falcate, narrowly triangular-lanceolate; mid-lobe many times larger, ovate, with the margins more or less irregular; disc with a pair of short keels near the base. Column slender, arcuate, dilated below, shorter than the lip, extended into a stout foot.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 471*.

Octomeria erosilabia C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 3: 85. 1935.

Plant medium-sized to large, with a creeping rhizome. Stems generally with a decumbent base, 9–19 cm. high, 4-angled in the dried plant, 3- to 5-jointed, provided with several (up to 5) tubular, evanescent sheaths. Leaf erect, subsessile to short-petioled; lamina rigid, thickly coriaceous, shining, oblong-linear or elliptic-linear, acute to subacute, with revolute margins, 10–17 cm. long (the longest blade incomplete at the apex in our specimen), 10–12 mm. wide. Inflorescences abbreviated, 1-flowered, very numerous, capitate. Flowers small, apparently subfleshy, creamy white to yellow. Dorsal sepal lanceolate, acuminate, 6–6.7 mm. long. Lateral sepals similar, free, oblong-lanceolate, acuminate, slightly longer and broader than the dorsal sepal. Petals similar to the dorsal sepal but smaller, lightly oblique. Lip about half as long as the sepals, 3-lobed near the base with the lateral lobes erect in natural position, oblong-ovate in outline when expanded, broadly cuneate at the base, about 3 mm. long; lateral lobes very small, rounded-auriculate; mid-lobe much larger, ovate or oblong-ovate, broadly truncate and more or less sharply tridentate in front, with denticulate-erose margins; disc with a pair of short, fleshy keels extending from the middle of the lateral lobes to the lower part of the mid-lobe. Column minute, stout, about 1.3 mm. long, with a short foot.

Loreto: Mishuyacu, near Iquitos, 100 meters, epiphyte in forest, *Klug 1192*. British Guiana (type).

Octomeria scirpoidea (Poepp. & Endl.) Reichb. f. Bot. Zeit. 10: 856. 1852; Cogn. Martius Fl. Bras. 3, pt. 4: 644. 1896. *Aspegrenia scirpoidea* Poepp. & Endl. Nov. Gen. ac Sp. 2: 12, t. 116. 1838.

Plant medium-sized, with a short, stout, creeping rhizome. Stems caespitose, numerous, slender, subterete, not thickened above, 8–17 cm. tall, 3- to 4-jointed, provided with several close, tubular, evanescent sheaths. Leaf small, erect or arcuate, linear-subulate, subcylindric, very acute, sessile, fleshy, deeply channelled, 5–8 cm. long, about 2 mm. wide. Inflorescences abbreviated, 1-flowered. Flowers small, membranaceous, lemon-yellow, successive. Dorsal sepal narrowly linear-lanceolate, sharply acute, concave, about 6 mm. long. Lateral sepals very similar, free. Petals linear, acuminate, about as long as the sepals, suboblique. Lip shorter than the sepals, ovate in outline, deeply 3-lobed near the base, rose-colored, 4–4.5 mm. long; lateral lobes rather long, falcate-subulate, very acute, erect; mid-lobe many times larger, obovate, 3-lobulate above, strongly constricted below, retuse at the apex, bicarinate near the base. Column very short and slender, 1.5 mm. long, with a 3-lobed clinandrium.

Huánuco: Near Cuchero (Cochero), on trees, *Poeppig 1581* (type). —Loreto: Near Tocache, at the Misión de los Cholones, *Poeppig s.n.*

Octomeria semiconnata C. Schweinf. Am. Orch. Soc. Bull. 21: 398, t., 1952. Figure 70.

Plant small and insignificant, caespitose, with a rather abbreviated, creeping rhizome. Stems approximate, up to 8 cm. long, entirely invested by several (up to 6) tubular, imbricating, evanescent sheaths. Leaf erect, linear, very fleshy, acute or obtuse and apiculate, gradually narrowed to a sessile, channelled base, up to 7.9 cm. long and 4.5 mm. wide (when freshly boiled). Inflorescences 1-flowered, axillary, fascicled. Flowers small, membranaceous, cupuliform, yellow with a red spot. Dorsal sepal oblong-ovate, acute, up to 5.8 mm. long. Lateral sepals similar but slightly shorter, connate to about the middle, lightly oblique. Petals elliptic-lanceolate, acute, rather shorter and very slightly narrower than the sepals. Lip much smaller than the other segments, prominently 3-lobed below the middle, with erect-incurved lateral lobes, up to about 2.9 mm. long and 2 mm. wide across the middle when expanded, truncate and apiculate in front; basal portion subquadrate or cuneate-subquadrate; lateral lobes small, auriculiform, erect; mid-lobe much larger, subquadrate-ovate; disc with a pair of short fleshy keels near the middle and a fleshy mid-nerve toward the apex beneath. Column very small, arcuate, about 1.5 mm. high, produced into a broad foot.

San Martín: Tingo María, in a deep ravine far up on ridge east of Tingo María, about 860 meters, in dense jungle, *Allard 21398* (type), *20732*.

Octomeria surinamensis Focke, Tijdschr. Natuur. Wet. 2: 200. 1849; Reichb. f. Walp. Ann. 6: 195. 1861; Cogn. Martius Fl. Bras. 3, pt. 4: 616. 1896.

Plant small to medium-sized, with a stout, creeping rhizome (not always obvious in the dried specimens). Stems apparently approximate, numerous, erect or ascending, from a slender terete base gradually dilated and laterally flattened toward the apex, usually 3- to 4-jointed, concealed by several tubular, evanescent sheaths, more or less longitudinally sulcate in the dried specimen, 3–10 cm. long. Leaf erect, thickly fleshy, commonly more or less petioled, linear to elliptic-oblong, acute or obtuse, cuneate at the base, 5.6–14 cm. long, 0.5–2 cm. wide, dull on the upper surface. Inflorescences abbreviated, 1-flowered, several in a cluster. Flowers small, membranaceous, yellowish white to yellow. Dorsal sepal ovate-oblong or elliptic-lanceolate, acute or acuminate, concave, 5.8–9.8 mm. long. Lateral sepals similar, oblong-lanceolate to ovate-lanceolate, lightly oblique, acute or acuminate. Petals obliquely oblong-lanceolate (rarely ovate-lanceolate), acuminate, somewhat shorter than the sepals. Lip shorter than the petals, 3.8–5.2 mm. long, sharply 3-lobed, with the lateral lobes erect in natural position; lower portion subquadrate, lightly cordate on each side at the base; lateral lobes below the middle, small, broadly falcate-semiovate, obtuse; terminal lobe much larger, rhombic-obovate, abruptly truncate in front with a trilobulate or tridentate apex (the middle tooth consisting of a mucro), more or less denticulate; disc with a pair of short keels

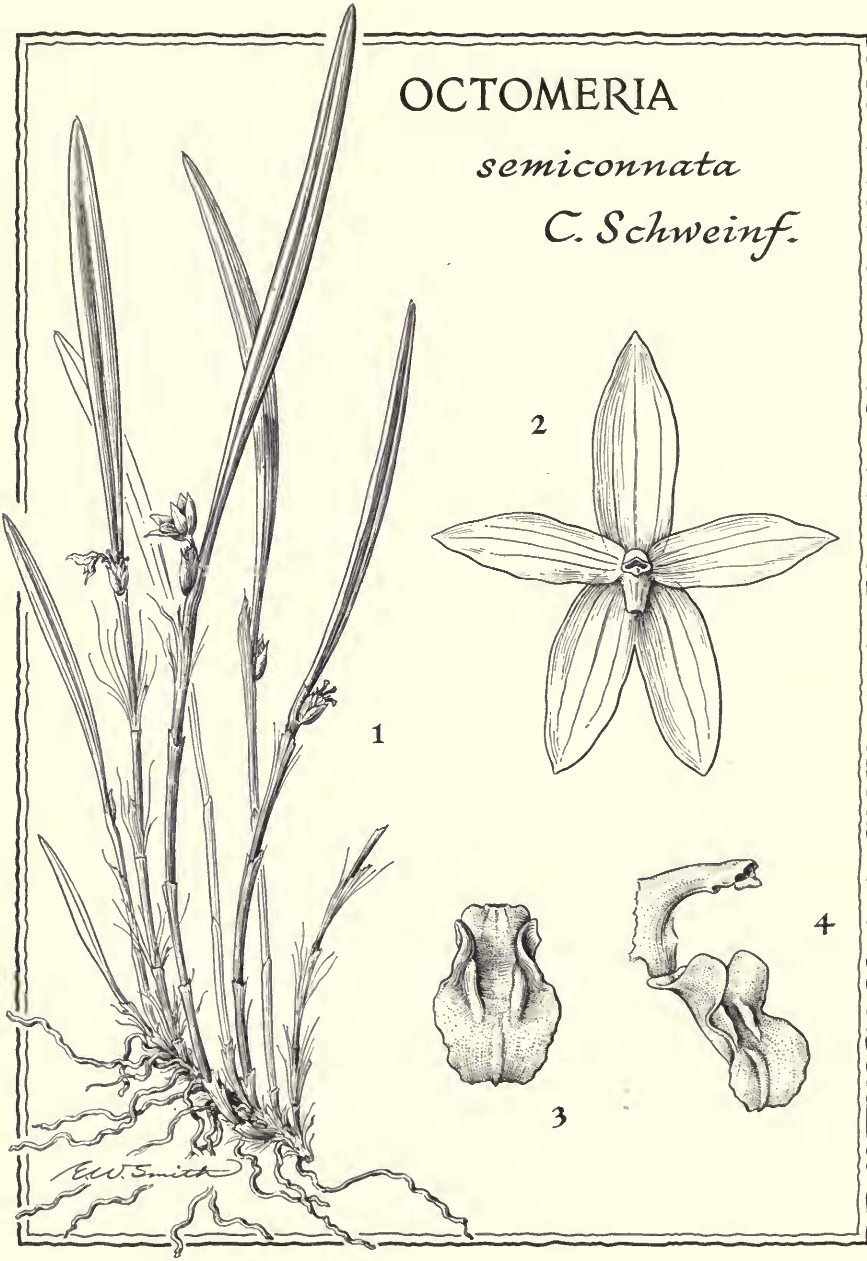

OCTOMERIA
semiconnata
C. Schweinf.
1
2
3
4
E.W. Smith

FIG. 70. *Octomeria semiconnata* C. Schweinf. 1, habit; × 1. 2, flower with lip removed, expanded; × 5. 3, lip from above; × 10. 4, column and lip, oblique view from side; × 10.

extending from the center of the lateral lobes to the lower part of the terminal lobe. Column half as long as the sepals or less, slender, arcuate, with a prominent foot.

Loreto: Region of the Marañon River from Iquitos up toward the mouth of the Santiago at the Pongo de Manseriche, 160 meters, about 77° 30′ west, epiphyte in rain-forest, *Tessmann 4147*. Vicinity of Iquitos, 100 meters, epiphyte, flowers golden-yellow and red-orange, *Klug 10105*. Same locality and altitude, flowers light yellow, *Klug 10133*. Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 503*. Also Surinam (type).

VARGASIELLA C. Schweinf.

A very small genus at the present time recorded only from Peru and Venezuela. Plant medium-sized to large, terrestrial or epiphytic. Stem elongate, many-jointed, decumbent and rhizomatose below, often with one or few strict, short branches near the middle. Leaves several, distichous, on the upper portion of the stem, more or less elliptic, articulated. Inflorescence subterminal or axillary, laxly racemose. Sepals oblong-ovate or lanceolate-oblong, similar. Petals similar to the sepals or broader. Lip simple, articulated to the column-foot, arcuate-recurved. Column rather short, stout, produced into a short foot. Anther small, galeate, 1-celled. Pollinia 4.

Vargasiella peruviana C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 150, t. 47. 1952. Frontispiece.

Plant slender, medium-sized. Stem elongate, many-jointed, decumbent and rhizomatose below. Leaves several, distichous, elliptic to elliptic-lanceolate, convolute, acuminate, sessile or indistinctly petioled at the cuneate base, articulated to close, tubular sheaths, up to 13.5 cm. long and 2.5 cm. wide. Inflorescence much surpassing the leaves, arising from the axil of an upper leaf, racemose above, up to about 33.5 cm. long, with the peduncle about 21.4 cm. long. Flowers medium-sized, subfleshy, white and pink. Dorsal sepal ovate-oblong, acute or mucronate, about 1.32 cm. long. Lateral sepals similar but slightly larger. Petals elliptic-ovate, similar to the sepals but slightly smaller. Lip simple, arcuate-recurved with erect sides in natural position; lamina with strongly undulate margins, ovate-oblong when forcibly expanded, rounded and acute or apiculate at the tip, with a pair of fleshy callose thickenings in the lower half, about 1 cm. long and 6 mm. wide. Column stout, arcuate, about 7 mm. high at the back, with a short, fleshy foot. Pollinia 4, in two unequal pairs.

Cuzco: Prov. of Convención, hills of Pintobamba, about 2400 meters, in forest humus, *Vargas 3288* (type). Prov. of Paucartambo, Pillahuata, 3400 meters, epiphyte in rain-forest, *Vargas 3010*.

MALAXIS Soland. ex Sw. (*Microstylis* Nutt. ex Lindl.)

A large and cosmopolitan genus of terrestrial (sometimes epiphytic), mostly inconspicuous plants, with or usually without a creeping rhizome. Stems mostly bulbous-thickened at the base, with one or several leaves. Leaves membranaceous, contracted below into a long-sheathing petiole. Flowers small to minute, disposed in an elongate spike or a contracted, subumbellate raceme. Sepals free or the lateral ones more or less connate below, subequal, spreading. Petals usually narrower than the sepals, often filiform. Lip sessile, entire or 2- to 3-lobed, commonly deeply concave near the base, broadly rounded to apiculate or many-toothed at the apex, often ciliate. Column very short.

A1.	Raceme or spike elongate	I
A2.	Raceme contracted or subumbellate, rarely ovoid	1
Ia.	Plant with 4 or more leaves; lip without a terminal lobe or apicule, finely erose or ciliolate	*M. liparidioides*
Ib.	Plant with 1 leaf; lip with a conspicuous terminal lobe or apicule.	*M. carnosa* (*Microstylis calycina*)
1a.	Base of the lip sagittate, or with prominent angles or uncinate protuberances	2
1b.	Base of the lip not sagittate and without prominent basal angles	4
2a.	Apex of the lip 3-toothed, relatively broad.	*M. excavata* (*Microstylis hastilabia*)
2b.	Apex of the lip simple, acuminate	3
3a.	Plant with a long-creeping rhizome; stems without a conspicuous tubular swelling at the base; leaves near the inflorescence	*M. ventricosa*
3b.	Plant without a creeping rhizome; stems with a conspicuous tubular swelling at the base; leaves subradical, below the middle of the stem	*M. rupestris*
4a.	Lip obtuse to broadly rounded at the apex	*M. Parthonii*
4b.	Lip abruptly acute, or apiculate to rostrate	5
5a.	Apex of the lip with a more or less elongate and thickened, sometimes upcurved, rostrum	*M. fastigiata*
5b.	Apex of the lip with a short, blunt, unthickened apicule	6
6a.	Plant 33 cm. or less tall; leaves elliptic to round-oval, obtuse to subacute, up to 6 cm. long and 3.7 cm. wide; flowers small, sepals about 3 mm. long, lip about 2.3 mm. long	*M. termensis*
6b.	Plant about 43 cm. tall; leaves broadly ovate, acute, up to 9 cm. long and 6.1 cm. wide; flowers very small, sepals about 2.3 mm. long, lip about 1.7 mm. long	*M. termensis* var. *elata*

Malaxis carnosa (HBK.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 32. 1941. *Stelis carnosa* HBK. Nov. Gen. et Sp. 1: 362. 1816. *Dienia calycina* Lindl. Gen. & Sp. Orch. 23 (1830). *Ophrys monophyllos* Pav. ex Lindl. Gen. & Sp. Orch. 23 (1830), in synon. *Microstylis calycina* Ridl. Journ. Linn. Soc. 24: 331. 1888. *Serapias parasitica* Pav. ex Ridl. Journ. Linn. Soc. 24: 331. 1888, in synon. *Malaxis calycina* O. Ktze. Rev. Gen. Pl. pt. 2: 673. 1891.

Plant slender, variable, up to about 55 cm. tall, with a bulbous-thickened base. Stem slender, concealed below by 2 or 3 tubular, imbricating sheaths of which the uppermost consists of the sheathing petiole of the leaf. Leaf solitary, apparently sessile but with a long sheathing base, elliptic-oblong to oval, subacute to broadly rounded above, up to 10 cm. long and 3.7 cm. wide, apparently erect and often clasping the stem. Spike very slender, many-flowered, dense but becoming loose in course of development, up to about 26 cm. long. Flowers very small, yellow or greenish yellow. Dorsal sepal broadly ovate to suborbicular, subacute to obtuse, about 2 mm. or less long. Lateral sepals a little smaller, obliquely ovate, subacute to obtuse, connate near the base. Petals smaller than the sepals, narrowly lanceolate or oblong-lanceolate to ovate- or rhombic-lanceolate, obtuse to truncate at the apex, recurved. Lip much shorter than the sepals and petals, about 1.3 mm. long and slightly wider, transversely round-oval to reniform, concave, with a median lobule or apicule which is small, oblong-ovate to ovate and subacute to rounded at the apex. Column minute.

Peru: Habitat not recorded, *Pavón s.n.*, fide Ridley, Journ. Linn. Soc. 24: 331. 1888. Prov. of Jaen de Bracamoros near Sondorillo and Mandor Rock, about 1800 meters, *Bonpland s.n.* (type of *Stelis carnosa*). Also Mexico (type of *Dienia calycina*) to Costa Rica.

Malaxis excavata (Lindl.) O. Ktze. Rev. Gen. Pl. pt. 2: 673. 1891. *Microstylis excavata* Lindl. Bot. Reg. 24, Misc. 51, no. 93. 1838. *Microstylis hastilabia* Reichb. f. Beitr. Orch. Centr.-Am. 101. 1866; Cogn. Martius Fl. Bras. 3, pt. 4: 283, t. 68, fig. 2 (erroneous drawings). 1895. *Malaxis hastilabia* O. Ktze. Rev. Gen. Pl. pt. 2: 673. 1891.

Plant slender, variable, up to about 42 cm. high, more or less bulbous-thickened at the base. Stem with the lower portion (usually about one half the entire length) concealed by several tubular, imbricating sheaths of which the uppermost is much the longest and leaf-bearing at the summit. Leaves 2, subopposite, appearing sessile but with a long-sheathing petiole, ovate (rarely ovate-lanceolate), acute or acuminate, spreading, up to 13 cm. long and 8 cm. wide. Raceme abbreviated, subumbellate, very densely many-flowered, with the rachis up to 2 cm. long. Flowers very small, long-pedicelled, spreading, white, green or yellowish. Dorsal sepal ovate-oblong to broadly ovate, with revolute sides, obtuse to subacute, 3–4.1 mm. long. Lateral sepals similar, rather smaller, lightly oblique. Petals narrowly linear to filiform, recurved or circinate, obtuse, shorter than the sepals. Lip slightly shorter than the sepals, triangular-ovate in outline with prominent retrorse, triangular or uncinate auricles, up to 3.2 mm. long, 3-toothed at the apex (usually with the central tooth the longest); lamina mostly concave, the hollow divided into a pair of compartments. Column minute.

Huancavelica: Prov. of Tayacaja, quebrada south of Salcabamba, 3300 meters, in moist humus of deep shaded ravine, *Stork & Horton 10283*.—Huánuco: Near Cuchero (Cochero), in woods, *Poeppig s.n.* Also Mexico (type of *M. excavata*) to Costa Rica (type of *M. hastilabia*), Panama and Colombia, Venezuela, Brazil, Bolivia and Argentina.

Malaxis fastigiata (Reichb. f.) O. Ktze. Rev. Gen. Pl. pt. 2: 673. 1891. *Microstylis fastigiata* Reichb. f. Linnaea 22: 834. 1849; Ridl.

Journ. Linn. Soc. 24: 326. 1888. *Ophrys ensifolia* Pav. Mss. ex Ridl., l.c., in synon.

Plant terrestrial, very variable, up to about 45 cm. high, with a bulbous-thickened base. Stem concealed below by 2 or 3 tubular, imbricating sheaths of which the uppermost is leaf-bearing. Leaves 1 or 2, subopposite or distinctly separated, ovate-oblong or oval to ovate-lanceolate, obtuse to acuminate, lightly cordate to cuneate at the base, up to 10 (rarely 13) cm. long and 5 (rarely 6.8) cm. wide. Raceme abbreviated, subumbellate, at the summit of a long naked peduncle, many-flowered, the rachis rarely up to 3.5 cm. long. Flowers very small, long-pedicelled, spreading, green to yellowish orange. Dorsal sepal lanceolate-oblong or ovate-oblong, obtuse, with revolute margins, up to 4 (rarely 4.5) mm. long. Lateral sepals similar, commonly slightly longer and wider, somewhat oblique. Petals linear to linear-lanceolate, much shorter than the sepals. Lip lanceolate-ovate, acuminate to more or less abruptly rostrate with a thickened apical portion, rounded to truncate at the base, with a large, more or less 2-chambered excavation through the lower half bordered by a fleshy ridge, about 3–3.8 mm. long. Column minute, stout.

Cuzco: Habitat unrecorded, Mercedes, 900 meters, *Bues s.n., 4.* Prov. of Convención, Hda. Potrero, Sapan-Sachayocc, 2200 meters, on open grass slope, *Vargas 2526.* Quebrada de Oropeza, Hacienda Quispicanchi, 3600 meters, *Herrera 2587,* fide Herrera, Sin. Fl. Cuzco 1: 194. 1941.—Huánuco: Between Huánuco and Pampayaco (Pampayacu), *Kanehira 314.*—Junín: Schunke Hacienda, above San Ramón, 1400–1700 meters, epiphyte in dense forest, *Killip & Smith 24857.* (This collection has only *passé* flowers.) A widespread and variable species extending from Mexico (type), Guatemala and Honduras to Colombia (fide Ridley) and Bolivia.

Malaxis liparidioides (Finet) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 9: 128. 1941. *Microstylis liparidioides* Finet, Bull. Soc. Bot. France 55: 333, t. 10, figs. 1–10. 1908.

Plant medium-sized, up to about 32 cm. high from the long-creeping and rooting rhizome. Stem erect from a decumbent, densely leafy base. Leaves about 4–13, clustered near the base, with the gradually narrowed, subpetioled bases imbricating below; lamina elliptic-lanceolate (often narrowly so), obtuse, up to 7 cm. long and 1.8 cm. wide. Inflorescence up to 27.5 cm. long; peduncle about 3–7 cm. long; raceme slender, elongate, laxly many-flowered, often nodding or arcuate above, up to about 20 cm. long. Floral bracts triangular-lanceolate, acuminate, about equaling the slender pedicellate ovary. Flowers very small, spreading, membranaceous. Dorsal sepal ovate-lanceolate to oblong-lanceolate, obtuse, up to 4 mm. long. Lateral sepals similar, oblique, reflexed. Petals linear or lanceolate-linear, slightly shorter than the sepals. Lip sessile, simple, elliptic-ovate or oval-ovate, acute, with the margins densely ciliolate or "minutely erose," about 4 mm. long in the middle and 3.3 mm. wide, rounded at the base without distinct auricles; disc with a small, fleshy, cordate callus at the base consisting of 2 confluent arms surrounding the column. Column minute.

Ecuador and Peru: Without locality, 1872 [*Grisar*] (type). Also Colombia (flowers noted as green with a white lip).

This concept may prove to be referable to *Malaxis caulescens* (Lindl.) O. Ktze., but the obtuse leaves and simple ciliolate lip appear distinctive.

Malaxis Parthonii Morr. Bull. Acad. Roy. Sci. Brux. 5: 485. 1838. *Microstylis Parthonii* Reichb. f. Walp. Ann. 6: 206. 1861; Cogn. Martius Fl. Bras. 3, pt. 4: 282. 1895.

Plant rather stout, with a bulbous-thickened base, up to about 58 cm. tall, variable. Lower part of the stem (below the leaves) concealed by several loose, tubular, imbricating sheaths of which the uppermost ones are much the longest and leaf-bearing. Leaves 2, commonly near the middle of the stem or below, subopposite; lamina ovate to oval or orbicular-ovate, up to 22 cm. long and 12 cm. wide, abruptly acute to acuminate, spreading, apparently sessile to subsessile but with long petioles that sheath the stem. Inflorescences more or less surpassing the leaves, up to 38 cm. long with the raceme abbreviated, subumbellate and densely many-flowered, the rachis up to about 2 cm. long in course of development. Flowers small, green or greenish brown, often with a yellowish lip, on long spreading pedicels. Sepals usually with revolute sides. Dorsal sepal lanceolate-oblong or ovate-oblong, obtuse to subacute, up to 4 (rarely 6) mm. long. Lateral sepals a little shorter than the dorsal sepal, semioval to obliquely round-ovate or ovate-oblong, obtuse, often more or less connate and forming a suborbicular lamina. Petals lanceolate-linear to filiform, recurved or circinate, shorter than the sepals. Lip broadly ovate to suborbicular or even reniform-oval, broadly obtuse to rounded at the apex, cordate at the base, more or less concave near the base, about 2–5 mm. long and 2.3–7.4 mm. wide. Column minute.

Junín: Chanchamayo Valley, 1800 meters, *Schunke s.n.*—Loreto (ex Cogniaux), fide Schlechter, Fedde Repert. Beih. 9: 133. 1921.—San Martín: Tarapoto, 750 meters, in forest, *Williams 6005*. Also Mexico to Panama, Colombia, Venezuela and Brazil (type).

Malaxis rupestris (Poepp. & Endl.) O. Ktze. Rev. Gen. Pl. pt. 2: 673. 1891. *Microstylis rupestris* Poepp. & Endl. Nov. Gen. ac Sp. 2: 8, t. 111. 1837; Cogn. Martius Fl. Bras. 3, pt. 4: 280. 1895.

Plant rather slender, up to 35 cm. tall, arising from a small, ovoid, sheathed pseudobulb. Stem erect, 2-leaved near the base, naked from the leaves up to the raceme. Leaves subopposite, either subequal or very unequal, elliptic or elliptic-lanceolate, acute, up to 7 cm. long and 3 cm. wide, erect-spreading, apparently sessile but abruptly contracted at the base into a long sheathing tubular petiole. Raceme abbreviated, subumbellate, densely many-flowered, with the rachis up to about 1 cm. long. Pedicels erect-spreading, elongate. Flowers very small, yellowish. Sepals subequally long, spreading. Dorsal sepal oblong-ligulate, obtuse, with revolute sides, about 3 mm. long. Lateral sepals ovate-oblong, lightly oblique, subacute, free, diverging, somewhat broader than the dorsal sepal. Petals lanceolate-linear to filiform, acute, recurved in course of development, about as long as the sepals. Lip broadly ovate-cordate, deeply concave, acuminate, sagittate at the base with small, reflexed, triangular auricles, about 2.5 mm. long and 2 mm. wide. Column minute, dilated below, surrounded by the sides of the concave lip.

Huánuco: Near the town of Cassapi (Casapi), on very warm calcareous cliffs, *Poeppig 1656* (type). Also Venezuela. This description was chiefly drawn from Cogniaux' treatment.

Malaxis termensis (Kränzl.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 33. 1941. *Microstylis termensis* Kränzl. Fedde Repert. 1: 91. 1905.

Plant up to about 33 cm. tall (very variable in size), arising from a bulb or a bulbous-thickened base. Lower part of the stem (below the leaves) concealed by 2 or 3 loose, tubular, imbricating sheaths of which the upper are leaf-bearing. Leaves single or 2 and subopposite, near the base of the plant or at least below the middle, elliptic to round-oval, acute to obtuse, up to about 6 cm. long and 3.7 cm. wide, more or less convolute around the stem when young, apparently sessile but with an abrupt, long-sheathing petiole. Inflorescence more or less elongate, terminated by an abbreviated, subumbellate, densely many-flowered raceme, with the rachis up to about 2 cm. long in course of development. Pedicels elongate, spreading. Flowers very small, green or yellowish. Sepals with revolute sides. Dorsal sepal ovate-oblong or oblong-elliptic, obtuse, about 3 mm. long. Lateral sepals similar, oblique, broadly obtuse. Petals linear to filiform, recurved, much shorter than the sepals. Lip very broadly ovate, with the lower portion deeply concave and more or less 2-chambered, terminating in a more or less distinct, short, blunt apicule, rounded to subtruncate at the base, 1.5–2.3 mm. long and subequally wide when expanded. Column very short, surrounded by the concave lip.

Ayacucho: Aina, between Huanta and Río Apurimac, 750–1000 meters, terrestrial in open woods, *Killip & Smith 22536*.—Cuzco: About Acomayo, 3050 meters, on natural fences of *Fourcroya, Vargas 243*. Apurimac Valley, *Herrera 3076a*. Valle del Urubamba, Ollantaitambo, 2800 meters, *Herrera 3458*.—Huánuco: Mito, about 3000 meters, on steep grassy slope, *Macbride 3419*.—Junín: Prov. of Tarma ("Terma"), 2700–3000 meters, on mountains east of Palca, in steppe land with numerous small grasses and scattering shrubs, *Weberbauer 2453* (type).—La Libertad: Prov. of Trujillo, Cerro Cabras, 500 meters, *Lopez 0474*.

Malaxis termensis (Kränzl.) C. Schweinf. var. **elata** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 10. 1953.

Plant taller than the type, apparently with a creeping rhizome. Stems about 43 cm. high, only slightly thickened below. Leaves 2, subopposite, broadly ovate, acute, about 9 cm. long, up to 6.1 cm. wide, about 14–16.5 cm. above the base. Raceme subumbellate, many-flowered. Flowers very small, greenish. Dorsal sepal oblong-lanceolate, about 2.3 mm. long. Lateral sepals obliquely oblong-ovate, subequally long but slightly broader than the dorsal sepal. Lip suborbicular-ovate, similar to that of the type, about 1.7 mm. long and slightly broader.

Amazonas: Prov. of Bongara, Pomocochas, about 2400 meters, terrestrial in ridge forests above Quebrada Santa Rosa, northeast across Lake Pomocochas, *Hodge 6152.*

Malaxis ventricosa (Poepp. & Endl.) O. Ktze. Rev. Gen. Pl. pt. 2: 673. 1891. *Microstylis ventricosa* Poepp. & Endl. Nov. Gen. ac Sp. 2: 9. 1837; Cogn. Martius Fl. Bras. 3, pt. 4: 281. 1895.

Plant with a long creeping rhizome bearing many stems, up to about 45 cm. tall. Stems elongate, rather robust, arising as ascending branches of the rhizome, the lower portion enclosed in a loose sheath which is clavate below. Leaves 2, subopposite, much above the middle of the stem, widely spreading, ovate-lanceolate or ovate-oblong, long-acuminate, up to 13 cm. long and 4.5 cm. wide, rounded at the base where abruptly contracted into a sheathing petiole, much longer than the naked peduncle. Raceme abbreviated, ovoid, densely many-flowered, with the thickened rachis up to about 1.5 cm. long. Flowers very small, on elongate, spreading pedicels. Dorsal sepal oblong-ligulate, obtuse, with revolute sides. Lateral sepals obliquely ovate-oblong, subacute, spreading. Petals subfiliform, at length recurved. Lip subrounded or broadly ovate-cordate, deeply concave (hemispheric), with an acuminate, reflexed apex, sagittate at the base.

Huánuco: Near Pampayaco (Pampayacu) and Cuchero (Cochero), in deep woods, *Poeppig 1745* (type). Also Venezuela, fide Cogn. l.c. This description was drawn chiefly from Cogniaux' treatment.

LIPARIS L. C. Rich.

A large cosmopolitan genus, either terrestrial or epiphytic, with erect, solitary or caespitose (rarely remote) stems, often bulbous-thickened at the base, or with long-creeping rhizomes. Leaves solitary to numerous, alternate or sometimes in pairs, approximate or distant, broadly round-ovate or broadly elliptic to lanceolate or linear-oblong, often more or less distinctly petioled with a sheathing base. Inflorescence a peduncled raceme which is lax or dense, few- or many-flowered. Flowers varying from minute to medium-sized, white or greenish through yellow and red to purple. Sepals free, commonly with revolute margins, rather broad to narrow. Petals narrower than the sepals, often filiform. Lip articulated to the footless column, generally ascending near the base and then reflexed-spreading, or spreading from the base, either simple and often retuse or bifid, or rarely somewhat 3-lobed or laciniate. Column usually slender and relatively elongate, arcuate, often thickened at the base and shallowly 2-winged at the apex.

A1. Plants without distinct, distichously leafed stems or elongate rhizomes....I
A2. Plants with distinct, distichously leafed stems or with elongate rhizomes..1
Ia. Leaf solitary; lip ovate to oblong-ovate......................*L. vexillifera*
Ib. Leaves several, congested; lip cuneate-obovate or flabellate, retuse to bilobed..*L. elata*

1a. Leaves 4 or more, distichous on leafy stems 2
1b. Leaves solitary or in remote pairs; plants with elongate rhizomes 3
2a. Lip ovate-rhombic, acute or acuminate, longer than broad; leaves crisped. *L. crispifolia*
2b. Lip cuneate-flabellate, lightly retuse and bluntly mucronate, markedly shorter than broad; leaves mostly flat . . . . *L. laticuneata*
3a. Leaf solitary, deeply cordate and clasping at the base. *L. retusa* (*L. neuroglossa*)
3b. Leaves in remote pairs, broadly cuneate to subcordate at the base 4
4a. Lip much broader than long, cuneate-reniform . . . . . *L. elegantula* (*L. Millei*)
4b. Lip longer than broad, subquadrate or broadly obovate to oval-oblong 5
5a. Flowers relatively small; lip 7–9 mm. long, rounded or subcordate near the base . . . . *L. ramosa*
5b. Flowers relatively large; lip 11–14 mm. long, cuneate-narrowed below. *L. ramosa* var. *Rusbyi* (*L. Rusbyi*)

Liparis crispifolia Reichb. f. Linnaea 41: 43. 1876; Ridl. Journ. Linn. Soc. 22: 280. 1886. *Leptorchis crispifolia* O. Ktze. Rev. Gen. Pl. pt. 2: 671. 1891.

Stem creeping with an ascending apex. Leaves about 4, distant, alternate, petioled; lamina cordate-ovate, acute or subacute, crisped, up to 5 cm. long and 3.7 cm. wide (according to Ridley); petioles distinct, sheathing at the base. Inflorescence about 7.5 cm. long, loosely racemose above, several-flowered, erect. Flowers large for the genus, showy. Parts of the perianth spreading, about 1.4 cm. long. Sepals linear-lanceolate, acuminate. Petals linear. Lip ovate-rhombic, acute or acuminate, dark purple, about 1.6 cm. long and 1 cm. wide. Column much shorter than the lip, slender, arcuate, with short, obtuse wings.

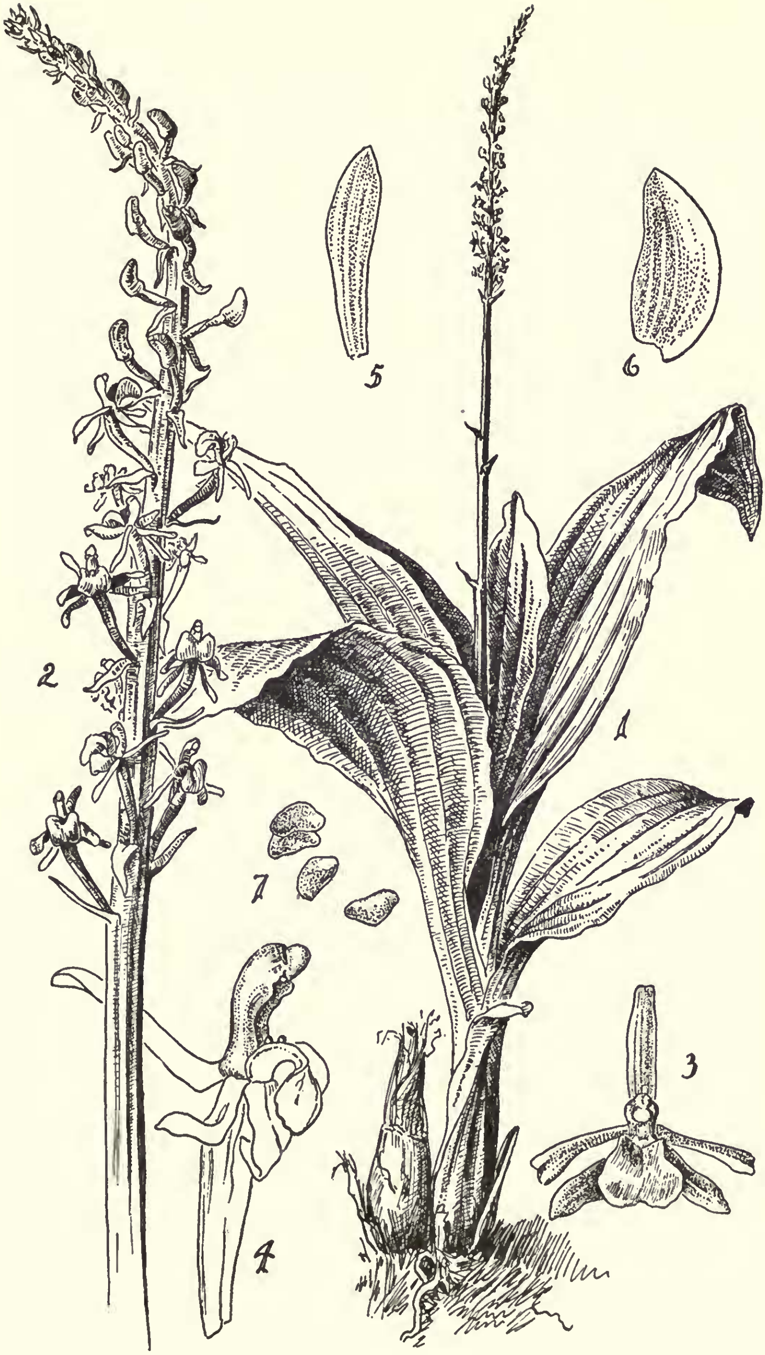
Cajamarca(?), fide Schlechter, Fedde Repert. Beih. 9: 133. 1921. Also Ecuador (type) and Venezuela(?).

I have examined a drawing of the type from the Reichenbach Herbarium.

Liparis elata Lindl. Bot. Reg. 14: t. 1175. 1828; Cogn. Martius Fl. Bras. 3, pt. 4: 286. 1895. Figure 71.

Plant terrestrial, glabrous, erect, very variable, 13 up to about 62 cm. high. Stem short, more or less bulbous-thickened at the base, entirely invested by imbricating sheaths. Leaves several, spreading, basal or near the base, rosulate, convolute, elliptic-lanceolate to oval, acute or acuminate, narrowed to sheathing, imbricated bases, up to about 30 cm. long and 11 cm. wide. Inflorescence 7–55 cm. long, with a long peduncle which is naked or provided with few distant, bract-like sheaths. Raceme more or less elongate, about 3–25 cm. long, loose, several- to many-flow-

FIG. 71. *Liparis elata* Lindl. 1, plant; × ¼. 2, inflorescence; × 1⅓. 3, flower, front view; × 5. 4, flower, side view; × 5. 5, petal; × 5. 6, lateral sepal; × 5. 7, pollinia, enlarged. Original drawing by Blanche Ames.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ered. Flowers small, long-pedicelled, white, greenish, yellowish or reddish to lavender or purple. Perianth-parts spreading. Dorsal sepal lanceolate-oblong or elliptic-oblong with revolute sides, obtuse (rarely subacute), 6–7 (rarely 8.2) mm. long. Lateral sepals shorter and broader, obliquely oblong-elliptic (semioval) or ovate-oblong, revolute above, obtuse or subacute. Petals narrowly oblong to linear (rarely linear-oblanceolate), more or less oblique, with revolute sides, shorter than the dorsal sepal. Lip subfleshy, cuneate-obovate or flabellate, retuse or bilobed and more or less apiculate, ascending at the base, reflexed-spreading above, provided near the base with a bilobed callus having spreading lobules, 4–6 mm. long, 3.6–5.6 mm. wide. Column somewhat shorter than the lip, arcuate, winged above.

Amazonas: Prov. of Chachapoyas, near Sesugu, *Mathews 3192.*—Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayocc, 2200 meters, on open grass slope, perianth yellow, *Vargas 2542.*—Huánuco: Near Cuchero (Cochero) and Pampayaco (Pampayacu), in rather open woods, *Poeppig 1453.*—San Martín: San Roque, 1350–1500 meters, in forest, *Williams 7012.* Zepelacio, near Moyobamba, 1200–1600 meters, in mountain forest, *Klug 3414.* Also Florida, Mexico to Panama, the West Indies, and Venezuela, Colombia and Brazil (type) to Bolivia and Paraguay.

Liparis elegantula Kränzl. Engler Bot. Jahrb. 37: 382. 1906; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 10: 33. 1941. *Liparis Millei* Schltr. Fedde Repert. 15: 53. 1917.

Stem long-creeping, consisting of long sections or branches bearing at the ends clusters of two leaves. Leaves abruptly petioled; lamina round-ovate to triangular-ovate (rarely broadly elliptic), acute to obtuse, truncate to subcordate (rarely rounded) at the base, up to 4 cm. long and 3.6 cm. wide; petiole channelled, sheathing at the base, up to 2.5 cm. long. Inflorescence axillary, up to about 12 cm. long, with the naked peduncle sheathed below by one of the petioles. Racemes loosely several- to many-flowered, up to about 4 cm. long. Flowers medium-sized, white, streaked with rose or maroon. Perianth-parts spreading. Sepals and petals with revolute margins. Dorsal sepal oblong-lanceolate, acute or obtuse, 5–6 mm. long. Lateral sepals similar but a little shorter, obtuse. Petals linear or lanceolate-linear. Lip from a cuneate base transversely oblong or cuneate reniform, prominently retuse and apiculate, irregularly erose-denticulate on the rounded sides, with a minute bilobed, forcipate callus at the base, up to about 4.75 mm. long and 7.5 mm. wide in front. Column about one half as long as the lip, arcuate, slender.

Amazonas: Prov. of Bongara, Pomocochas, 2400 meters, terrestrial in rain-forest, on ridges near Chido Quebrada, southwest of village, *Hodge 6138.*—Junín: Prov. of Tarma, mountains west of Huacapistana, 2700 meters, in low, open, moist woods mingled with shrubs, often enveloped in cloud, *Weberbauer 2289* (type of *L. elegantula*). Also Ecuador (type of *L. Millei*).

Liparis laticuneata C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 104, t. 34. 1951. Figure 72.

Plant medium-sized, decumbent, with a stout, long-creeping rhizome bearing very scattered fibrous roots and leaves. Stem a gradual continuation of the rhizome. Leaves 4–7 cm. distant on the rhizome and subapproximate on the erect stem, distinctly petioled; lamina ovate or ovate-lanceolate, acute or acuminate, broadly cuneate to subcordate at the base, very variable in size, up to 5.5 cm. long and 3 cm. wide; petioles stout, channelled, with a slightly dilated, sheathing base, up to 2.5 cm. long. Inflorescence erect, about 13 cm. long. Raceme subdensely many-flowered, with the rachis about 9 cm. long. Flowers rather small for the genus, "pale yellow-greenish." Sepals and petals reflexed, with revolute margins. Dorsal sepal lanceolate-oblong, subacute to abruptly obtuse, about 6–6.6 mm. long. Lateral sepals similar but slightly wider, suboblique. Petals linear or lanceolate-linear, abruptly truncate and minutely retuse at the tip, slightly longer than the sepals. Lip flabellate-cuneate, rather abruptly dilated from a very short cuneate base, obscurely retuse and bluntly apiculate at the broadly rounded apex, about 7–8 mm. long and 10–13 mm. wide above the middle; disc with a central thickened band. Column minute, stout, arcuate, about 1.1 mm. high at the back.

Cuzco: Prov. of Convención, "alturas de Pintobamba," 2700 meters, epiphytic or [terrestrial] in humus of wet forest, *Vargas 3264*.

Liparis ramosa Poepp. & Endl. Nov. Gen. ac Sp. 2: 9, t. 112. 1837; Cogn. Martius Fl. Bras. 3, pt. 4: 291. 1895.

Stem long-creeping, consisting of long sections or branches which bear scattering simple, lanuginose roots and close, tubular sheaths and terminate in a pair of petioled leaves. Lamina broadly ovate to orbicular-ovate or oval, commonly acute (more rarely subacute or acuminate), broadly cuneate to subcordate at the base, 4 to about 8 cm. long, up to 6 cm. wide. Petioles channelled, up to about 6 cm. long, the lower of the pair generally somewhat stouter with its gradually dilated base sheathing the base of the upper petiole, rarely about 1 cm. distant at the base. Inflorescence axillary, up to about 22 cm. long including the rachis of the raceme, with the lower portion sheathed by the petiole (of the upper leaf), the peduncle naked up to the raceme. Raceme loosely several- to many-flowered; rachis up to about 12 cm. long. Flowers medium-sized, green or greenish white to lilac, membranaceous, with the perianth-parts spreading. Dorsal sepal linear-lanceolate with revolute sides, subacute, about 8 mm. long. Lateral sepals oblong-lanceolate, very oblique below, acute, apiculate, with revolute sides, slightly shorter and broader than the dorsal sepal. Petals narrowly linear to filiform, with revolute sides, slightly shorter than the dorsal sepal. Lip subquadrate or subquadrate-obovate to subrotund-obovate, rounded at the apex with denticulate margins, more or less distinctly apiculate, subcordate to rounded near the ascending base, abruptly reflexed below, with a pair of minute calli at the base, about 7–9 mm. long and 5.8–7 mm. wide. Column much shorter than the lip, slender, arcuate, thickened at the base.

Huánuco: Toward Pampayaco (Pampayacu) and Cuchero (Cochero), in primeval woods and shady places in the woods, *Poeppig 1607* (type).—Junín: Chanchamayo Valley, 1200 meters, *Schunke A.*

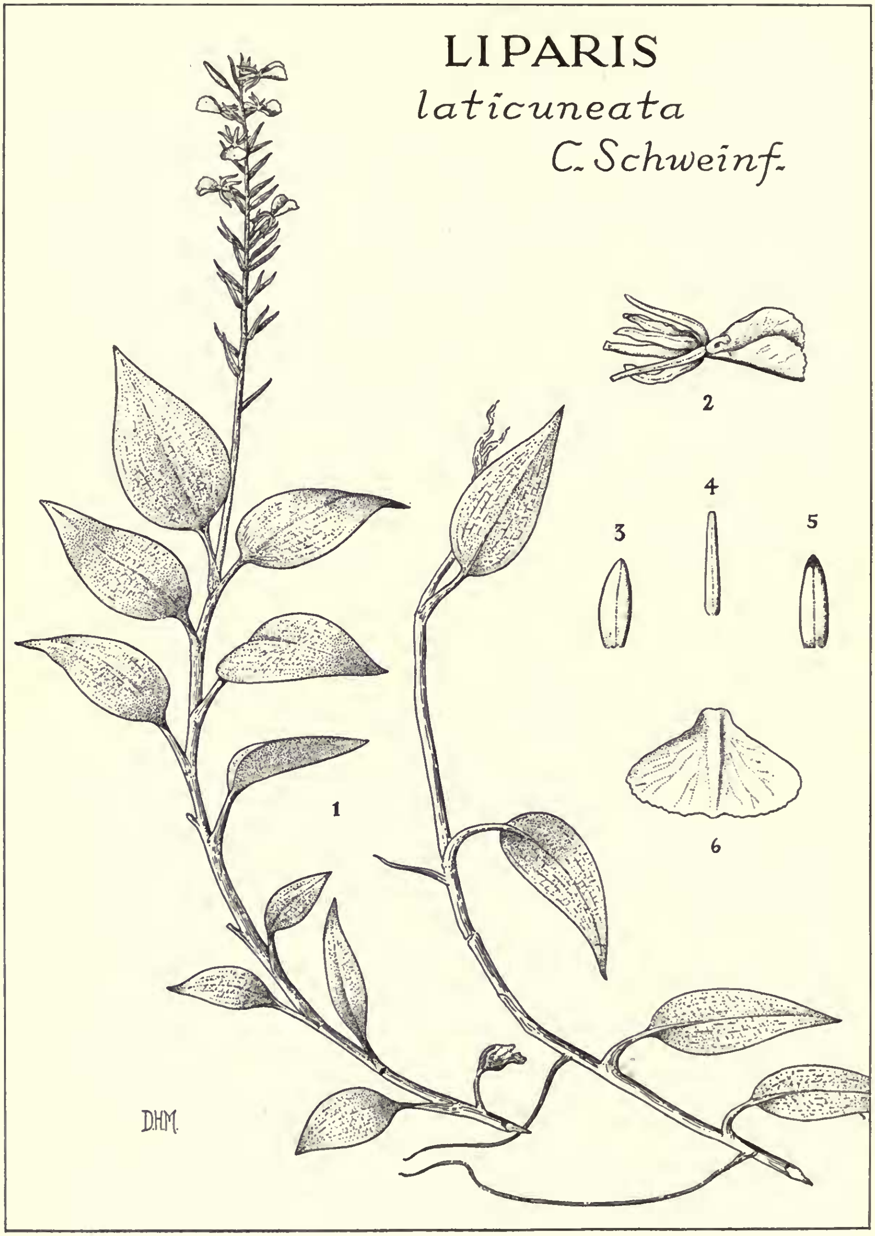
LIPARIS
laticuneata
C. Schweinf.
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FIG. 72. *Liparis laticuneata* C. Schweinf. 1, plant; × ½. 2, flower from side; × 2. 3, lateral sepal; × 2. 4, petal; × 2. 5, dorsal sepal; × 2. 6, lip, expanded; × 2.

Same locality, 1800 meters, *Schunke 566.* Same locality, 1500 meters, *Schunke 1320.* Schunke Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A58.* Same locality, 1400–1700 meters, terrestrial in dense forest, *Killip & Smith 24669.*—San Martín: Zepelacio, near Moyobamba, 1200–1600 meters, in mountain forest, *Klug 3568.*

Liparis ramosa Poepp. & Endl. var. **Rusbyi** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 106. 1951. *Liparis Rusbyi* Rolfe, Bull. N. Y. Bot. Gard. 4: 454. 1907.

Plant very similar to the type, but with markedly larger flowers. Stem or rhizome long-creeping and branching, the sections reaching a length of 14 cm. and terminating in a similar pair of long-petioled leaves; blades broadly ovate or round-ovate, up to 8 cm. long and 6.3 cm. wide; petioles up to 5.5 cm. long. Inflorescence up to 28 cm. long, with the rachis up to 15 cm. long. Flowers larger than in the type. Sepals about 10–12 mm. long. Lip broadly obovate or oblong-obovate to oblong-oval, with a more or less cuneate base, about 11–14 mm. long and 7–11 mm. wide.

Cuzco: Prov. of Urubamba, Machu-Picchu, 2100 meters, in humus of humid forest, *Vargas 3331.* Prov. of Urubamba, "Huiñaihuaina," Inca ruins, 2550 meters, in humus of forest, *Vargas 4129.*—Junín: Prov. of Tarma, Agua Dulce, 2500 meters, terrestrial in shade in rain-forest, *Woytkowski 35459.* Also Bolivia (type).

Liparis retusa Fawc. & Rendle, Journ. Bot. 47: 128. 1909. *Liparis neuroglossa* Rolfe, Bull. N. Y. Bot. Gard. 4: 454. 1907, not Reichb. f.

Plant rather small, slender. Rhizome creeping, provided with rather distant, scarious sheaths, producing very short stems at remote intervals. Stems concealed by the loose, tubular petiole of the leaf. Leaf solitary, suborbicular-cordate or ovate-cordate, abruptly acute, appearing sessile and clasping the stem (abruptly contracted at the base into a sheathing petiole), up to 4.5 cm. long from the apex to the tip of a rounded lobule and 4.1 cm. wide, horizontally spreading. Inflorescence up to 15.7 cm. long from the summit of the swollen portion of the stem to the tip of the raceme; raceme loosely several- to many-flowered, with the rachis up to about 7 cm. long. Flowers rather large for the plant, membranaceous, apparently brownish-violet. Dorsal sepal linear-lanceolate, acuminate, 6.5–8.3 mm. long. Lateral sepals oblong-lanceolate, oblique, acute, shorter and broader than the dorsal sepal. Petals linear with revolute sides, longer than the dorsal sepal. Lip obovate-suborbicular to cuneate-semiorbicular, more or less broadly retuse and sharply apiculate, 6–7.2 mm. long in the middle, 7–10.3 mm. wide above, with the margins finely fimbriolate. Column slender, strongly arcuate, much shorter than the lip.

Cuzco: Prov. of Convención, "alturas de Pintobamba," 2600 meters, both epiphytic and terrestrial in humus, *Vargas 3249.* Prov. of

Urubamba, "Huiñaihuaina," Inca ruins, 2550 meters, in humus of forest, *Vargas 4124.* Also Bolivia (type).

Liparis vexillifera (Llave & Lex.) Cogn. Martius Fl. Bras. 3, pt. 4: 289. 1895. *Cymbidium vexilliferum* (as *vexiliferum*) Llave & Lex. Nov. Veg. Descr. Orch. Fasc. 2: 11. 1825. *Sturmia elliptica* Reichb. f. Linnaea 22: 833. 1849.

Plant erect, small to medium-sized, rarely up to about 30 cm. tall, glabrous. Stem short, with a bulbous base concealed by several scarious sheaths. Leaf solitary, basal or near the base, erect or erect-spreading, elliptic-oblong to lanceolate-elliptic (rarely oblong), acute or acuminate, long-narrowed to the sheathing base, frequently appearing conduplicate in the dried specimen, up to about 13 cm. long and 3 cm. wide. Inflorescence more or less surpassing the leaf, naked up to the raceme, clasped below by the sheathing base of the leaf. Raceme loose to subdense, several- to many-flowered, up to about 14 cm. long. Flowers medium-sized, yellowish green to yellow-orange, often with purple markings. Perianth-parts spreading, with revolute sides. Dorsal sepal oblong-lanceolate, acute or acuminate, up to 8 mm. long. Lateral sepals similar to the dorsal sepal but commonly somewhat shorter and broader, lightly oblique, dorsally carinate especially near the apex. Petals linear, shorter than the dorsal sepal. Lip ovate or oblong-ovate, broadly obtuse to rounded (rarely acute or mucronate), undulate on the lateral margins which are more or less emarginate, rounded at the base, with the median nerve and sometimes 2 lateral nerves thickened, up to 7 (rarely 9) mm. long and 5.3 (rarely 7) mm. wide. Column short, arcuate, often dilated near the base, about one half as long as the lip.

Ayacucho: Aina, between Huanta and Río Apurimac, 750–1000 meters, terrestrial on open hillside, *Killip & Smith 23187.*—Cuzco: Prov. of Convención, Hda. Potrero, Sapan-Sachayocc, 2200 meters, on open grass slope, perianth yellow-orange, *Vargas 2529.* A variable and widespread species with several recognized varieties, the typical form occurring from Mexico (type) to Costa Rica, the West Indies, Colombia, Venezuela and Bolivia.

DIOTHONEA Lindl.

A small genus of South American epiphytes consisting of close and imperfectly understood species, including the genus *Hemiscleria,* and very nearly allied to *Epidendrum.* Plants medium-sized. Stems cylindric (not pseudobulbose or fusiform), commonly more or less branched, distichously many-leaved, concealed by tubular, rigid sheaths. Leaves narrow, linear to oblong or lanceolate-oblong, abruptly subobtuse to bilobed. Inflorescence a terminal raceme, commonly lax or pendent, several- to many-flowered, loose or dense. Flowers small to rather large, long-pedicelled. Sepals subequal, suborbicular-ovate to lanceolate or triangular, concave, the lateral ones oblique. Petals rather similar to the sepals or much narrower. Lip more or less adnate to the sides of the column, forming a deeply concave base, variously shaped, more or less 3-lobed or rarely simple, sometimes with a minute auricle or lateral lobe at the base. Column abbreviated, stout, winged.

A1. Outer surface of the sepals rough with conspicuous uncinate or subconical appendages; lip pandurate . . . . *D. exasperata*

A2. Outer surface of the sepals smooth I

Ia. Mid-lobe of the lip subquadrate or subquadrate-oblong; peduncle relatively elongate, stout, clavate-thickened up to the rachis of the raceme; flowers small, fleshy, dorsal sepal 5–6 mm. long.
D. nutans (*Hemiscleria nutans, Epidendrum rhopalorhachis*)

Ib. Mid-lobe of the lip (if lip is 3-lobed) not subquadrate or subquadrate-oblong; peduncle commonly short, slender and indistinct; flowers relatively large, membranaceous 1

1a. Flowers large, sepals about 4 cm. or more long; dorsal sepal triangular; lip with 7 serrulate, carinate nerves extending through the basal half . . *D. suavis*

1b. Flowers smaller, sepals about 1.5 cm. or less long; dorsal sepal not triangular; lip without 7 serrulate, basal keels 2

2a. Petals linear or lanceolate-linear; lip finely denticulate . . . . . *D. heterothonaea*

2b. Petals rhombic-ovate or elliptic-lanceolate; lip more or less denticulate.
D. lloensis (*D. gratissima*)

Diothonea exasperata C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 107, t. 35. 1951. Figure 73.

Plant slender, lax. Stem slender, simple or sparingly branched, entirely concealed by close, tubular leaf-sheaths. Leaves numerous (remaining only on the upper sheaths), distichous, narrowly linear or lanceolate-linear, abruptly rounded and apiculate at the apex, sessile and semiamplexicaul at the base, up to 8.5 cm. long and 5 mm. wide. Raceme terminal, nodding, short, with the slender rachis about 2.5 cm. long, subdensely 9-flowered. Flowers rather small, pinkish white. Sepals with numerous, prominent, uncinate or subconical appendages on the outer surface. Dorsal sepal elliptic-lanceolate, subacute, about 9.5 mm. long. Lateral sepals ovate-lanceolate, very oblique, acute, semiorbicular-dilated at the base in front, somewhat larger than the dorsal sepal. Petals linear or lanceolate-linear, abuptly acute, lightly subfalcate, a little shorter than the lateral sepals. Lip somewhat longer than the sepals, strongly adnate to the column with a complanate-semiglobose base; lamina pandurate-subquadrate, retuse to bilobed in front, broadly cuneate below, with denticulate-erose margins; disc with a short tricarinate callus near the base, about 12.8 mm. long. Column short, stout, with the wing on each side gradually dilated from the apex to the base.

Cuzco: Prov. of Paucartambo, Pillahuata, *Vargas 4953.*

Diothonea heterothonaea Reichb. f. & Warsc. Bonpl. 2: 112. 1854.

Plant medium-sized, up to about 40 cm. long. Stems stout or slender, more or less branched, lax, leafy, mostly concealed by tubular, evanescent leaf-sheaths. Leaves numerous, distichous, linear or lanceolate-linear, obtuse with a minutely bilobed and apiculate apex, spreading, about 5–8.5 cm. long and 5 mm. wide. Racemes short, pendulous, rather loosely few- (up to 13-) flowered. Flowers medium-sized, smooth. Dorsal sepal elliptic-ovate to elliptic-oblong ("linear-lanceolate"), acute, about 8–14 mm. long. Lateral sepals slightly larger, falcate-semiovate, acute. Petals linear to lanceolate-linear, falcate, obtuse or acute,

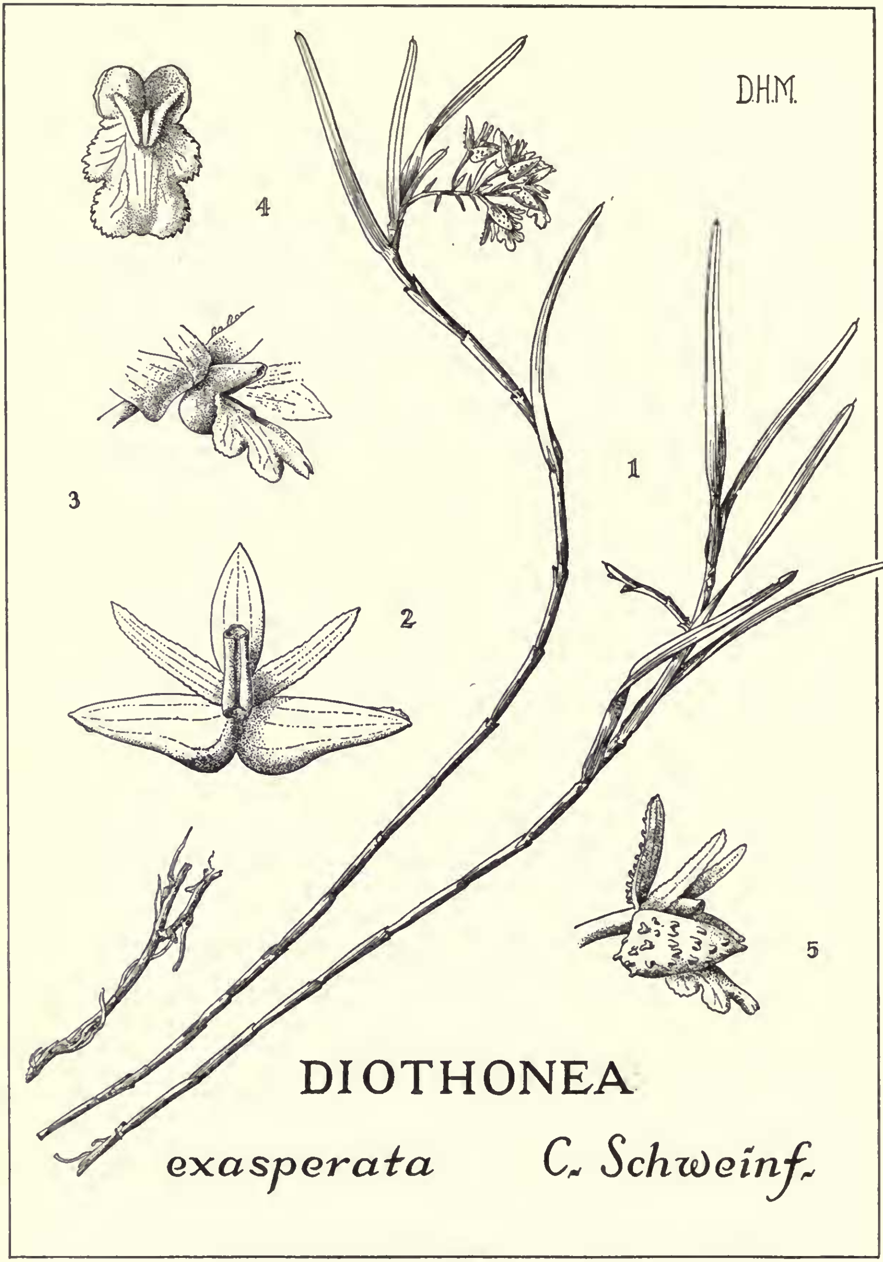
D.H.M.
4
3
1
2
5
DIOTHONEA
exasperata C. Schweinf.

FIG. 73. *Diothonea exasperata* C. Schweinf. 1, plants; × ½. 2, flower without lip, expanded; × 2. 3, column and lip from side; × 1½. 4, lip, expanded; × 1¾. 5, flower from side; × 1½.

subequaling the sepals, with the margins often irregular. Lip distinctly exceeding the rest of the perianth, rotundate-ovate, more or less 3-lobed near the apex, retuse, with the margins irregularly denticulate, up to about 9 mm. long. Column short, recurved above, with the lateral margins alate in front and entirely connate with the base of the lip.

Peru: Habitat not recorded, *Warscewicz s.n.* (type). Also Colombia.

The above diagnosis was compiled from the description, from drawings with floral analysis in the Reichenbach Herbarium, and from two Colombian collections referable to this species.

Diothonea lloensis Lindl. Hook. Journ. Bot. 1: 12. 1834; Rolfe, Hook. Ic. Pl. 31: t. 3012. 1915. *Diothonea gratissima* Reichb. f. Bot. Zeit. 10: 772. 1852; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 178. 1944.

Plant variable, epiphytic or terrestrial, tall, stout, commonly much branched, leafy, entirely concealed by tubular, striate leaf-sheaths, about 20–50 cm. high. Leaves linear-lanceolate to linear or linear-oblong, more or less narrowed to a bilobulate apex, sessile, up to 11 cm. long and 1.2 cm. wide but commonly much smaller. Inflorescences terminal on the stems or branches, short, more or less pendulous, several- to many-flowered, 2–11 cm. long. Flowers membranaceous, pinkish red or brown to yellowish, medium-sized for the genus, smooth. Dorsal sepal oblong-ovate, acute or subacute, concave, 8.2–10 mm. long. Lateral sepals very obliquely oblong-ovate, acute or acuminate, more or less distinctly carinate, a little larger than the dorsal sepal. Petals rhombic-ovate to elliptic-lanceolate, obtuse to short-acuminate, slightly shorter than the dorsal sepal but often broader. Lip markedly exceeding the other segments, adnate to the winged base of the column, the free part spreading or reflexed, suborbicular to round-obovate, subentire to distinctly 3-lobed above the middle with the broad apical portion more or less retuse, cuneate to rounded below, about 9–14 mm. in greatest length, the margins being irregular to minutely denticulate; disc with several more or less distinct short keels at the base. Column short, stout, incurved, broadly winged, the wing gradually dilated from the apex to the base where adnate to the lip.

"Peru"(?), fide Schlechter, Fedde Repert. Beih. 9: 144. 1921, as *D. gratissima* Reichb. f. Ecuador (type) and Colombia.

Diothonea nutans (Lindl.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 179. 1944. *Hemiscleria nutans* Lindl. Fol. Orch. Hemiscleria (1853) 1. *Epidendrum Hemiscleria* Reichb. f. Walp. Ann. 6: 383. 1862. *Epidendrum rhopalorhachis* Kränzl. Fedde Repert. 1: 180. 1905.

Plant tall, epiphytic. Stem strict, stout, up to 60 cm. tall, leafy throughout, apparently entirely concealed by tubular leaf-sheaths about 2–6 cm. long. Leaves distichous, erect and appressed to the stem, oblong-lanceolate to linear-ligulate, obtuse to subacute, minutely serrulate-erose, up to 13.7 cm. long and 2.8 cm. wide. Inflorescence nodding, terminal, clavate-thickened up to the stout rachis, about equaling the subtending leaf; raceme short, densely many-flowered, about 2.7 cm. long, subglobose in outline when in flower. Flowers small, orange, smooth, with the pedicellate ovary about 3 cm. long. Dorsal sepal suborbicular-ovate, subacute, fleshy, concave, 5–6 mm. long. Lateral sepals similar but slightly larger, apiculate. Petals similar to the sepals but of thinner texture, broadly triangular-ovate, obtuse, rounded or subcordate at the base. Lip surpassing the rest of the perianth, 3-lobed, adnate to the lateral margins of the column at the base; lateral lobes minute, auriculiform; mid-lobe much larger, subquadrate to subquadrate-oblong (sometimes lightly cuneate), retuse and often apiculate; disc provided below with 3 thickened lines of which the median is much the largest. Column abbreviated, very stout.

Amazonas: Chachapoyas, *Mathews s.n.* (type of *Hemiscleria nutans*). Prov. of Chachapoyas, 10 km. on trail from Leimebamba to Chachapoyas, 3500 meters, in moist shaded places, *Metcalf 30794.* In the vicinity of the Inca stronghold of Malca near Cuelap, south of Chachapoyas, 2800 meters, in evergreen woods consisting of sclerophyllous and more delicate forms, *Weberbauer 4311.*—Cajamarca: Chugur, northwest of Hualgayoc, 2700–2900 meters, in a mixture of trees and shrubs, *Weberbauer 4100* (type of *Epidendrum rhopalorhachis*).

Diothonea suavis Reichb. f. & Warsc. Bonpl. 2: 112. 1854.

Stem stout, branching, more or less concealed by tubular leaf-sheaths. Leaves ligulate, obtuse, apiculate, distichous. Raceme several- (up to 9-) flowered. Flowers large and showy, sulphur-colored in the dried specimen. Sepals subequal, triangular, subacute, the lateral ones with the forward margin obliquely curved, about 4 cm. long. Petals elliptic-oblong, subacute. Lip cuneate-flabellate, lobulate in front, very minutely denticulate, adnate to the winged margins of the column below, the lower half of the disc traversed by 7 carinate-thickened nerves which are antrorsely serrulate. Column incurved, winged nearly to the apex.

Peru: Habitat not recorded, *Warscewicz s.n.*

This description is a liberal translation of the original diagnosis. I have seen no material of this species.

AMBLOSTOMA Scheidw.

A very small group of tropical American epiphytes which is closely allied to the genus *Epidendrum* (section *Euepidendrum*) but is readily separated by its subglobose, unappendaged pollinia.

Plants small to large, with a creeping rhizome (often not present in the dried specimen). Stems more or less stout, fusiform below where concealed by tubular, scarious sheaths, distichously several-leaved above. Leaves oblong-linear or (rarely) oblong, abruptly obtuse to bilobulate at the apex, sessile, spreading. Inflorescence racemose or more commonly loosely paniculate with spreading and often curving branches. Flowers small, loose or dense, very numerous. Sepals subequal, lanceolate-elliptic to oblong or obovate-oblong, concave, with the lateral ones lightly oblique. Petals narrow, oblanceolate, linear-spatulate or oblong-spatulate. Lip adnate to the column up to its apex, forming an urceolate cup, the free portion of the lamina tripartite into narrow lobes. Column very short and broad, obliquely dilated above, long-adnate to the lip. Pollinia 4, subglobose, unappendaged.

A1. Pedicellate ovaries densely pubescent; lip with 3 or 5 distinct calli; inflorescence racemose, strict............................*A. gracile* var. *robustum*
A2. Pedicellate ovaries glabrous; lip with 2 or 3 more or less distinct calli; inflorescence usually an open panicle..............*A. tridactylum* (*A. densum*)

Amblostoma gracile Garay var. **robustum** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 17: 42, t. 16. 1955. Figure 74.

Plant medium-sized, with a stout, creeping rhizome, relatively robust, up to about 33 cm. high (apex of raceme incomplete in the type specimen). Stems fusiform, approximate, entirely concealed nearly to the apex by several close, scarious, tubular, evanescent sheaths, 15–17.5 cm. long. Leaves 4, clustered near the apex of the stem, variable in shape and size, oblong-lanceolate to linear, narrowed above to an abrupt, subacute and apiculate or obtuse apex, slightly narrowed below to a sessile, clasping base, up to 12 cm. long and 1.5 cm. wide. Inflorescence solitary, strict, racemose, up to about 16 cm. long, subdensely many-flowered nearly to the base. Pedicellate ovaries densely pubescent. Flowers very small, whitish green with pale brown sepals. Sepals and petals incurved. Dorsal sepal oblong-elliptic, obtuse and apiculate, strongly concave, about 4.2 mm. long, very fleshy. Lateral sepals similar, obliquely elliptic-oblong and somewhat broader above, acute, deeply concave, slightly larger than the dorsal sepal. Petals oblanceolate-linear, obtuse, a little shorter than the sepals, suboblique. Lip entirely adnate to the column; lamina small, tripartite, about 1.3 mm. long; lateral lobes obliquely obovate-subquadrate, partially concealed by an ovate-oblong lamina which is free along the front; midlobe slightly longer and narrower, ovate-oblong, subacute, with 3 narrow fleshy calli of which the central one is much the longest. Column relatively large, obliquely obovoid-infundibuliform when viewed from the side, with lacerate apical margins.

Junín: Prov. of Tarma, Agua Dulce, 1900 meters, in large clumps on tree in low highland forest, *Woytkowski 35476*.

Amblostoma tridactylum (Lindl.) Reichb. f. Walp. Ann. 6: 485. 1863; Reichb. f. Saund. Refug. Bot. 2, t. 101. 1878; Cogn. Martius Fl. Bras. 3, pt. 5: 23, t. 7. 1898. *Epidendrum tridactylum* Lindl. Bot. Reg. 24, Misc. 46, no. 81. 1838. *Amblostoma cernua* Scheidw. Otto & Dietr. Allg. Gartenz. 6: 383. 1838. *Amblostoma densum* Reichb. f. Xen. Orch. 3: 22. 1878.

Plant medium-sized to large, variable, up to about 50 cm. or more high, with a stout creeping rhizome (often not present in the dried specimen). Stems fusiform, slender to rather stout, apparently subremote, erect or ascending, entirely or mostly concealed by tubular, scarious, leaf-bearing sheaths, about 15–30 cm. high, sometimes 15 mm. thick in the middle. Leaves several, distichous, those present (4–6) on the upper part of the stem, oblong-lanceolate to oblong-linear or lanceolate-linear, erect or ascending, abruptly acute to rounded and apiculate at the apex, clasping at the base, up to 22 cm. long and 14 mm. wide. Inflorescence

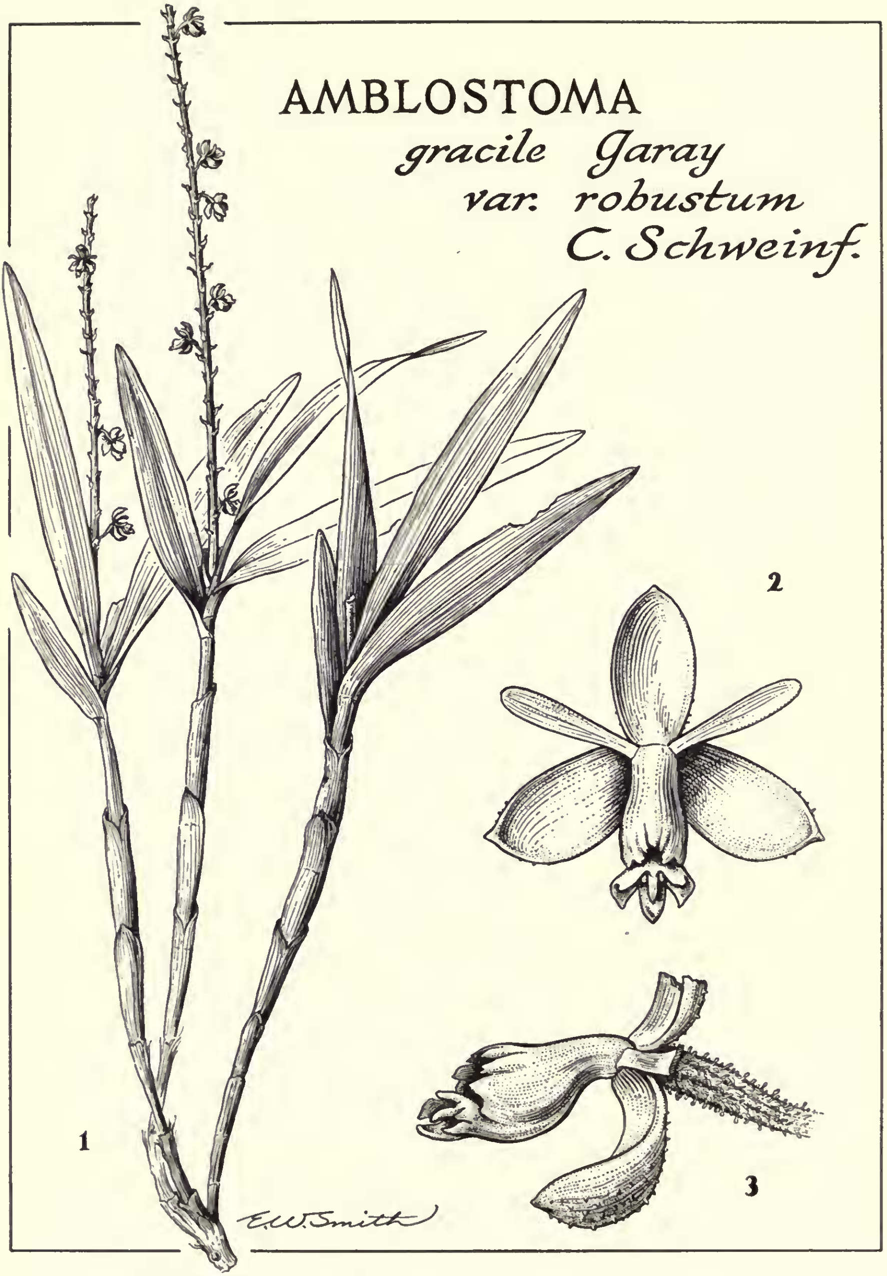
AMBLOSTOMA
gracile Garay
var. robustum
C. Schweinf.
2
3
1
E.W. Smith

FIG. 74. *Amblostoma gracile* Garay var. *robustum* C. Schweinf. 1, plant; × ½. 2, flower, expanded; × 5. 3, column and lip from side; × 6.

usually very loosely paniculate (rarely racemose), the branches spreading, commonly arcuate or nodding, loosely or densely many-flowered and elongate. Pedicellate ovaries glabrous. Flowers small, rather fleshy, pale yellow or greenish yellow to reddish brown or dark purple, with spreading segments. Sepals and petals incurved. Dorsal sepal obovate-oblong to elliptic-oblong, concave, subacute to obtuse, about 3–5 mm. long. Lateral sepals subequally long but broader, obliquely obovate, acute. Petals spatulate to oblong-cuneate, subacute to rounded at the apex. Lip adnate to the tip of the column; lamina tripartite, about 2–2.5 mm. long in the middle; lateral lobes divaricate, broadly oblong when expanded, with more or less involute margins (thus appearing linear), obtuse or retuse, suboblique; mid-lobe triangular to ovate-oblong, obtuse to acute, shorter than or subequaling the lateral lobes; disc with indistinct lateral calli adnate to the column and sometimes thickened through the middle of the mid-lobe. Column infundibuliform, with undulate apical margins.

Amazonas: La Peca, northeast of Jaen, 1000 meters, epiphyte, sepals reddish brown with green tips, petals pale yellowish green, *Woytkowski 37020*.—Cuzco, fide Schlechter, Fedde Repert. Beih. 9: 145. 1921 (*A. densum*). Also Mexico (type of *Amblostoma cernua*), Brazil (type of *Epidendrum tridactylum*) and Bolivia (type of *A. densum*).

HEXISEA Lindl.

Small to medium-sized American epiphytes. Stems caespitose, simple or branched, consisting of several superposed, terete or commonly thickened members which are unifoliate or bifoliate at the apex. Leaves narrow, obtuse or bilobulate, rigid, early deciduous in the lower part. Racemes terminal, few-flowered, the short peduncle concealed by imbricated sheaths. Flowers small to medium-sized, salmon, orange, red or purple. Segments campanulate or spreading. Sepals narrow, subequally long, the lateral sepals with a very short mentum. Petals similar to the sepals but somewhat smaller. Lip deeply adnate to the column, forming a saccate, erect base and a deflexed, simple or 3-lobed, mostly narrow lamina which is often similar to the other perianth-members. Column short, stout, forming a deep cup with the base of the lip, having a 3-lobed clinandrium. Anther opercular, incumbent, 2-celled. Pollinia 4, waxy, not compressed.

A small genus, extending from Mexico through Central America to Panama, locally in the West Indies and in northern South America.

Hexisea bidentata Lindl. var. **imbricata** (Lindl.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 106. 1951. *Diothonea imbricata* Lindl. Sert. Orch. t. 40, fig. 1. 1841. *Epidendrum oppositifolium* A. Rich. & Gal. Ann. Sci. Nat. ser. 3, 3: 21, no. 46. 1845. *Diothonea oppositifolia* Reichb. f. Linnaea 22: 842. 1849. *Euothonaea imbricata* Reichb. f. Bot. Zeit. 10: 772. 1852. *Euothonaea oppositifolia* Reichb. f. Bot. Zeit. 10: 772. 1852. *Hexisea imbricata* Reichb. f. Walp. Ann. 6: 470. 1862. *Hexisea oppositifolia* Reichb. f. Walp. Ann. 6: 470. 1862.

Plant caespitose, 12.5–30 cm. or more tall. Stems suberect to arcuate, consisting of 3 or more superposed, more or less swollen members, which are longitudinally sulcate in the dried plant, either simple or branched at the nodes, concealed when young by several imbricating sheaths which disappear in the course of development. Leaves arising from the apex of the stem-members, in pairs and subopposite (perhaps rarely solitary), elliptic-oblong to linear-oblong or linear, obtuse to minutely bilobulate and apiculate, sessile at the cuneate complicate base, up to 10 cm. long and 1.3 cm. wide, often very small (on the apical growths), rigid. Inflorescences very short, racemose, few-flowered, the peduncle concealed by scarious, imbricating sheaths. Flowers rather small, salmon pink (rarely) to scarlet. Dorsal sepal oblong-ovate or elliptic-ovate, acute or short-acuminate, dorsally carinate at the apex, 12–15 mm. long, about 5 mm. wide. Lateral sepals similar, oblong-lanceolate to ovate-lanceolate, acute or short-acuminate, oblique at the base, slightly shorter and broader than the dorsal sepal. Petals narrowly to broadly oblong, sharply acute, distinctly shorter and narrower than the sepals. Lip adnate to the basal part of the column, forming a deep sac or cup, above producing a spreading or reflexed lamina; lamina ovate-oblong, subacute or acute, often with involute sides, adorned at the base by a pair of short approximate keels, about 8.2–10 mm. long, 3.6–4 mm. wide. Column very short and stout, 3–3.3 mm. long at the back, prominently 3-toothed at the apex, with the lateral teeth larger, porrect and obliquely dolabriform.

Cuzco: Prov. of Convención, Sahuayaco, epiphyte, 1550 meters, *Vargas 6286.* Also Mexico (type of *Epidendrum oppositifolium*) through Central America to Panama and British Guiana (type of *Diothonea imbricata*) and locally in Colombia.

LANIUM (Lindl.) Benth.

A small epiphytic genus of northern South America, with an abbreviated or long-creeping, sheathed and often branched rhizome. Stems more or less distant, short, either cylindric and distichously 2- to 8-leafed or pseudobulbous-abbreviated and 2-leafed at the apex. Leaves subterete to oblong or broadly elliptic-ovate. Inflorescence commonly more or less surpassing the leaves, loosely few- to many-flowered, racemose or paniculate. Flowers small, with spreading segments. Pedicellate ovary and sepals pubescent without. Dorsal sepal ovate-lanceolate to linear-lanceolate, subacute to acuminate. Lateral sepals commonly broader, oblique, distinctly adnate to the column at the base. Petals linear, usually shorter than the sepals. Lip adnate to the column up to the apex; lamina simple, ovate or rhombic, concave, sharply acute to acuminate. Column prominent, dilated upward in front, commonly terminating in a pair of angulate teeth or auricles. Anther terminal, incumbent, 2-celled, with 4 ovoid-pyriform, unflattened pollinia in 2 superimposed pairs. Two species have been found in Peru.

A1. Stems pseudobulbous, 2-leafed at the apex; leaves broad and flat. .*L. avicula*
A2. Stems not pseudobulbous, distichously 2- to 8-leafed throughout; leaves narrow, fleshy, almost triquetrous........................*L. microphyllum*

Lanium avicula (Lindl.) Benth. Hook. Ic. Pl. 14: 25, t. 1335. 1881; Cogn. Martius Fl. Bras. 3, pt. 5: 26, t. 8, fig. 1. 1898. *Epiden-*

drum avicula Lindl. (as *E. avicule*) Hook. Journ. Bot. 3: 85. 1841; Kränzl. Xen. Orch. 3: 84, t. 246, figs. I, II, 1–7. 1892.

Plant small, epiphytic, with a stout, creeping rhizome concealed by loose, scarious, imbricating sheaths. Stems more or less remote, abbreviated, pseudobulbous-thickened (especially in age), about 1–3 cm. long, obliquely bifoliate at the apex. Leaves sessile, spreading, flat, round-ovate to broadly elliptic, acute to rounded at the apex, about 1.5–3.2 (rarely 5) cm. long, up to 15 mm. wide. Inflorescences terminal, much exceeding the leaves, simply racemose to paniculate above, loosely several- to many-flowered, 6–16 cm. tall, with the peduncle, rachis, pedicellate ovary and outer surface of the sepals densely white-tomentose. Flowers small, with spreading segments, yellowish brown, pale greenish red, or yellowish green sometimes spotted with red. Dorsal sepal lanceolate or oblong-lanceolate, acute or acuminate, about 6–7.2 mm. long. Lateral sepals broadly lanceolate or ovate-lanceolate, very oblique, complicate-acute, about as long as the dorsal sepal but much broader. Petals linear, broadest in the middle, acute or acuminate, lightly oblique, shorter than the sepals. Lip adnate to the column up to its upper portion; lamina rhombic-suborbicular or rhombic-ovate, acuminate, abruptly acute or triangular-apiculate, concave, about 4.5 mm. long, up to 4 mm. wide when expanded, cuneate at the base, with the outer margins somewhat irregular. Column stout, dilated upward in front, bidentate at the apex, about 5 mm. long at the back.

Junín: Prov. of Tarma, Agua Dulce, 1800 meters, in large clumps on a dry rotten tree trunk in a sunny spot in the tall forest, *Woytkowski 35491*. Also Brazil (type of *Epidendrum avicula*).

Lanium microphyllum (Lindl.) Benth. Hook. Ic. Pl. 14: 24, t. 1334. 1881; Cogn. Martius Fl. Bras. 3, pt. 5: 28. 1898. *Epidendrum microphyllum* Lindl. Hook. Journ. Bot. 3: 85. 1841. *Lanium peruvianum* Schltr. Fedde Repert. Beih. 9: 97. 1921; Mansf. Fedde Repert. Beih. 57: t. 123, nr. 481. 1929.

Plant small, epiphytic, with an elongate, creeping, branched, rooting rhizome which is concealed by loose, evanescent sheaths and produces more or less remote, short branches. Branches prostrate to erect-ascending, 1 to rarely 4 cm. long, closely concealed by imbricating leaf-sheaths. Leaves distichous, 4–8, spreading and often recurved in the dried plant, oblong-linear, very fleshy and almost triquetrous, up to 3 cm. long, acute and apiculate, clasping at the base. Inflorescence terminal, racemose above, loosely 2- to 8-flowered (up to 14 flowers shown in the drawing of the type), 2–7 cm. tall, more or less surpassing the leaves, with a pilose peduncle and rachis. Flowers small, green or purplish, with spreading segments. Sepals pilose without. Dorsal sepal linear-lanceolate or narrowly oblong-lanceolate, acuminate, 3.5–7.7 mm. long. Lateral sepals obliquely lanceolate, acuminate, equally long but distinctly wider than the dorsal sepal, obliquely adnate to the column at the base, lightly carinate above. Petals linear, broadest in the middle, acute or acuminate, usually somewhat shorter than the sepals, oblique. Lip adnate to the column up to its apex, almost as long as the sepals; lamina simple, concave, broadly or narrowly ovate, more or less abruptly acuminate, rounded or broadly cuneate at the base, up to 4.7 mm. long and 3.8 mm. wide when expanded, with the margins of the lower portion more or less irregular; disc at the base with a pair of very small, complanate calli joined to the thickened middle line. Column conspicuous, dilated upward in front, terminating on each side in a broad, obliquely triangular tooth, up to 4 mm. long at the back.

Junín: La Merced, in the Chanchamayo Valley, 1000 meters, *Weberbauer 1887* (type of *L. peruvianum*). Chanchamayo Valley, 1500 meters, *Schunke 1084*. East of Quimirí Bridge, near La Merced, 800–1300 meters, epiphyte in dense forest, *Killip & Smith 23953*. Río Paucartambo Valley, near Perene Bridge, 700 meters, epiphyte in dense forest, *Killip & Smith 25362*.—Loreto: Vicinity of Iquitos, 100 meters, on tree in dense forest, *Klug 10026*. Middle portion of Marañon River, San Isidro, at mouth of the Pastaza River, 135 meters, on *Crescentia cujete, Tessmann 4949*. A rather variable little species extending from British Guiana (type of *Epidendrum microphyllum*) and Surinam to Peru and Colombia.

EPIDENDRUM L.

The largest genus of neotropical orchids, extending from North Carolina (U.S.A.), through the West Indies and Central America to Argentina.

Plants epiphytic or more rarely terrestrial, very small to large and robust, up to 3 meters or more tall, erect or creeping, with or without a conspicuous rhizome. Stems either thickened into subglobose or pyriform-cylindric pseudobulbs bearing leaves only at the summit, or slender, more or less leafy, and either simple or much branched. Leaves one to numerous, terete or flattened, varying from linear to oval, rounded to long-acuminate at the apex. Inflorescence commonly terminal, rarely lateral from the leafy stem, simple (racemose or subumbellate) to diffusely paniculate, erect or nodding, one- to many-flowered. Flowers minute to large. Parts of the perianth more or less spreading. Petals usually much narrower than the sepals. Lip slightly adnate to the column or more commonly adnate to the column up to the apex of the latter, simple or 3-lobed, smooth or callose. Column short to long, wingless or prominently winged or auricled. Anther terminal, opercular, incumbent, 2-celled. Pollinia 4, waxy, equal, in one series with 2 in each cell, more or less flattened.

A1. Stems with true pseudobulbs or bulbous-thickened throughout, surrounded by scarious non-leaf-bearing (often evanescent) sheaths; leaves one to several borne at or near the summit of the pseudobulb. Section *Encyclium*[1]......I

A2. Stems without true pseudobulbs, although sometimes thickened at the base or above; leaves usually several to numerous, distributed along the stem. Section *Euepidendrum*...24

Ia. Lip free or very slightly adnate to the relatively elongate column........1

Ib. Lip strongly adnate to column, often joined to column up to its apex.....6

1a. Lip simple, elongate; bracts large, strict, spathaceous............*E. Ottonis*

1b. Lip sharply 3-lobed, nearly as broad as long when expanded; bracts very small, spreading..2

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[1] Rarely exact reference to the vegetative growth of a species is lacking, but the floral details and the indicated relationship show the status of the species.

2a. Lateral lobes of the lip rhombic, porrect; disc of the lip with a pair of low, stout, approximate calli below; anther deeply emarginate.....*E. thrombodes*

2b. Lateral lobes of the lip not rhombic or porrect; disc of the lip without a pair of low, stout calli below..3

3a. Posterior margin of the lateral lobes of the lip angulate or rounded-angulate in the middle, lamina slightly retrorse; pedicellate ovary strongly papillose-asperate..4

3b. Posterior margin of the lateral lobes of the lip without an angle in the middle, lamina commonly antrorse or spreading..........................5

4a. Petals spatulate, obtuse; lip broadly rounded in front..........*E. microtos*

4b. Petals oblanceolate, acute; lip emarginate.
E. cyperifolium (*E. microtos* var. *grandiflorum*)

5a. Lateral lobes of the lip falcate-triangular-lanceolate, acute..*E. sclerocladium*

5b. Lateral lobes of the lip not falcate-triangular-lanceolate, obtuse to rounded at the apex.................*E. oncidioides*[1] var. *gravidum* (*E. gravidum*)

6a. Pseudobulbs with one leaf...7

6b. Pseudobulbs with 2 or more leaves..................................15

7a. Lamina of the lip simple..8

7b. Lamina of the lip more or less 3-lobed.............................10

8a. Sepals and petals long-acuminate; lamina of the lip cochleate, abruptly acuminate....................................*E. fragrans*[2]

8b. Sepals and petals acute to obtuse; lamina of the lip subacute to obtuse...9

9a. Peduncle filiform, 0.75 mm. thick; ovary with a prominent, tubular vesicle; lip oblong or elliptic................................*E. micro-Cattleya*

9b. Peduncles stout, 1.5 mm. or more thick; ovary without a prominent, tubular vesicle; lip rotundate-cordate or pentangular.................*E. saxicola*

10a. Lobing of the lip shallow and often indistinct................*E. saxicola*

10b. Lobing of the lip deep and distinct...............................11

11a. Flowers very large, lateral sepals 3.5 cm. or more long; lateral lobes of the lip long-ciliate.......................................*E. ciliare*[3]

11b. Flowers medium-sized to small, lateral sepals 1.5 cm. or less long; lateral lobes of the lip dentate to entire.................................12

12a. Raceme elongate, much surpassing the leaf, densely many- (30- or more-) flowered...*E. parvilabre*

12b. Raceme abbreviated, few- (10- or less-) flowered..................13

13a. Rhizome long-creeping; petals slightly broader than the sepals.
E. monzonense

13b. Rhizome apparently abbreviated; petals much narrower than the sepals..14

14a. Raceme subtended by a prominent spathe; mid-lobe of the lip bilobed.
E. unifoliatum[4]

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[1] Some forms of the polymorphic *E. oncidioides* from Central America have ovate-lanceolate lateral lobes of the lip (similar to those of *E. thrombodes*), but they lack the pair of approximate calli on the disc of the lip.

[2] Very rarely the pseudobulbs of this species bear 2 leaves.

[3] This species usually has 2 or 3 leaves on the pseudobulb, but rarely a single leaf is evident. Accordingly, the concept is included in this branch of the key also.

[4] This concept, of which I have seen no example, is of uncertain affinity; it may be referred to *Encyclium* or to *Euepidendrum*. Therefore, I have included it in both sections of the key.

14b. Raceme not subtended by a spathe; mid-lobe of the lip acute or acuminate. *E. breviracemum*[1]

15a. Lamina of the lip simple, rarely obscurely lobulate..................16

15b. Lamina of the lip 3-lobed..18

16a. Inflorescence many-flowered; sepals obovate-oblong, very fleshy, maculate within..................*E. crassilabium* (*E. variegatum*, *E. saccharatum*)

16b. Inflorescence 1- to 2-flowered; sepals ovate to oblong or elliptic-oblong, apparently neither very fleshy nor maculate........................17

17a. Pseudobulbs small, about 12 mm. or less long; leaves very acute; sepals ovate; lip naked, serrulate.................................*E. serpens*

17b. Pseudobulbs larger, 30 mm. or more long; leaves obtuse to rounded at the apex; sepals oblong or elliptic-oblong; lip bituberculate or bicallose at the base..*E. Harmsianum*

18a. Lip adnate to the column up to the apical part......................19

18b. Lip adnate to the lower part or up to the middle part of the column; lateral lobes entire; column short, prominently 3-toothed or 3-lobed at the apex..22

19a. Rhizome elongate, with more or less remote pseudobulbs; mid-lobe of the lip narrowly triangular or linear-triangular; inflorescence abbreviated. *E. pygmaeum* (*Hormidium pseudopygmaeum*, *Hormidium tripterum*)

19b. Rhizome apparently abbreviated, with approximate pseudobulbs.......20

20a. Plant large, 50 cm. or more tall; rachis stout, paniculate, with several to many lateral racemes................................*E. polystachyum*

20b. Plant small, 18 cm. or less tall; rachis slender, simply racemose........21

21a. Leaves narrow (1.4 cm. or less wide), cuneate below; raceme loosely flowered, much surpassing the leaves...........................*E. rupestre*

21b. Leaves broad (2 cm. or more wide), subcordate below; raceme congested, equaling or shorter than the leaves if the latter were extended. *E. breviracemum*

22a. Petals acuminate, scarcely broader above the middle; lateral lobes of the lip more or less recurved; mid-lobe of the lip triangular-acuminate. *E. grammatoglossum*

22b. Petals acute to obtuse, distinctly broader above the middle; lateral lobes of the lip not recurved; mid-lobe of the lip ovate or ovate-quadrate, acute...23

23a. Flowers small, petals 2.5 mm. or less wide above; lateral sepals obtuse to shortly acute; lateral lobes of the lip markedly smaller than the mid-lobe. *E. Feddeanum*

23b. Flowers larger, petals 4 mm. or more wide above; lateral sepals short-acuminate; lateral lobes of the lip about equaling the mid-lobe. *E. Hartwegii* (*E. fuscum*)

24a. Lip simple, obscurely lobulate or bilobed...........................25

24b. Lip 3-lobed or 3-lobulate (rarely 4-lobed)...........................88

25a. Inflorescences on short, lateral, naked branches on the leafy stem.......26

25b. Inflorescences terminal, often at the apex of leafy branches............27

26a. Lip suborbicular-cordate, about as broad as long, with 2 calli at the base; sepals about 1.3 cm. long..............................*E. aggregatum*

26b. Lip rotund-reniform, distinctly broader than long, with a central keel between the 2 basal calli; sepals about 1 cm. long............*E. pleurobotrys*

27a. Blade of the leaf not articulated to the sheathing base................28

27b. Blade of the leaf articulated to the sheath.........................30

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[1] This species sometimes has a bifoliate pseudobulb.

28a. Plant relatively large, stems 15 cm. or more tall; leaves distinctly separated (i.e., the bases not imbricating); flowers numerous, capitate. *E. capitellatum*

28b. Plant small, stems 6 cm. or less tall; leaves approximate, with the sheathing bases imbricating; flowers 1 or 2....................................29

29a. Rhizome short or apparently wanting; petals distinctly narrower than the dorsal sepal...........*E. Schlechterianum* (*Nanodes discolor, E. brevicaule*)

29b. Rhizome elongate, flexuous; petals nearly or quite as broad as the dorsal sepal.................*E. longirepens* (*E. Schlechterianum* var. *longirepens*)

30a. Flowers solitary or several in a congested, subumbellate raceme........31

30b. Flowers neither solitary nor few and congested-subumbellate...........41

31a. Lamina of the lip transverse (broader than long), commonly reniform to transversely oval, often with a cordate base.........................32

31b. Lamina of the lip not transverse, longer than broad or about equally long and broad..34

32a. Raceme peduncled (at least when mature), nodding or spreading; stems much branched above...................................*E. soratae*

32b. Racemes sessile, erect..33

33a. Stems much branched; upper leaves strongly falcate.........*E. vesicicaule*

33b. Stems simple; leaves not falcate.................*E. difforme* (*E. latilabre*)

34a. Lower part of the lip conspicuously lacerate-dentate..........*E. laceratum*

34b. Lower part of the lip minutely denticulate or entire..................35

35a. Margin of the leaves and of the perianth-segments (especially the lip) minutely denticulate...............................*E. minutidentatum*

35b. Margin of the leaves and of the perianth-segments entire (rarely the lip is microscopically ciliolate)..36

36a. Lamina of the lip broadly oval to subrotund, broadest near the middle...37

36b. Lamina of the lip ovate or ovate-triangular, broadest near the base.....38

37a. Flowers large, 1–4, sepals 2.5–3.2 cm. long; petals similar to the sepals; column free from the lateral sepals above.........*E. Scutella* (*E. platyoon*)

37b. Flowers smaller, always solitary, sepals about 1.5 cm. or less long; petals much narrower than the sepals; column entirely adnate to the lateral sepals..........................*E. Porpax* (*E. Mathewsii, E. gnomus*)

38a. Stems densely leaved; flower solitary; ovary without a tubular sac above. *E. brevicaule*

38b. Stems loosely leaved; flowers 2 to several; ovary with a tubular or ventricose sac..39

39a. Plant without a long-creeping rhizome or repent leafless portion; stem commonly divaricately branched throughout (rarely simple); floral bracts large, spathaceous, very conspicuous.........................*E. strobiliferum*

39b. Plant with a long-creeping rhizome or repent leafless portion; floral bracts minute..40

40a. Leaves 1 or 2, 1 cm. wide; petals obtuse; lip with a thickened median line. *E. macrogastrium*[1]

40b. Leaves commonly 4 to 7 to a stem, about 1.5 cm. or more wide; petals acute...*E. megagastrium*

41a. Lamina of the lip denticulate to fimbriate or lacerate................42

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[1] The position of this species in the key was based solely on the description, as I have seen no other record.

41b. Lamina of the lip neither denticulate, lacerate, nor fimbriate (rarely the margin is irregular or crenulate) 51

42a. Bracts of the inflorescence large, paleaceous, erect .... *E. arundinaceum*

42b. Bracts of the inflorescence commonly small, inconspicuous, and more or less spreading 43

43a. Petals broader than the sepals, rhombic-lanceolate or rhombic-oblanceolate; lower margins of the lamina of the lip lacerate or sharp-dentate. *E. imatophyllum*

43b. Petals markedly narrower than the sepals, oblanceolate-oblong or oblanceolate-linear 44

44a. Lamina of the lip broadly obovate-oblong; raceme loosely 3- to 4-flowered, half concealed by the upper leaves .... *E. gastrochilum*

44b. Lamina of the lip not obovate, i.e., commonly broadest near the base or in the middle; raceme (or panicle) usually many-flowered 45

45a. Pedicellate ovary and outer surface of the sepals densely muricate; leaves elliptic-lanceolate, acuminate .... *E. muricatum*

45b. Pedicellate ovary and outer surface of the sepals glabrous 46

46a. Plant robust and stout, sheathed stems near the base about 10 mm. or more in diameter; leaves broadly oblong, elliptic-oblong or oval 47

46b. Plant slender, sheathed stems near the base about 6 mm. or less in diameter; leaves lanceolate or linear-lanceolate 48

47a. Leaves oblong-elliptic or oval, broadly rounded above, chartaceous, spreading; panicle virgate, with few-flowered, erect branches .... *E. refractoides*

47b. Leaves oblong, prominently bilobed above, fleshy-coriaceous, erect or ascending; panicle spreading, with many-flowered branches .. *E. densifolium*

48a. Herb small, leaves 5.5 cm. or less long; lip transverse (broader than long) .. 49

48b. Herb larger, leaves 7–16 cm. long; lip not transverse 50

49a. Inflorescence a divaricately branched panicle with distant flowers; floral bracts minute .... *E. vincentinum* (*E. serricardium*)

49b. Inflorescence racemose (very rarely with a single side branch) with more or less approximate flowers; floral bracts conspicuous, ovate to triangular-lanceolate .... *E. fimbriatum*

50a. Leaves 8 mm. or less wide; sepals 7–8 mm. long .... *E. blepharichilum*

50b. Leaves 12–16 mm. wide; sepals 10–15 mm. long. *E. blepharichilum* var. *majus*

51a. Peduncle invested by several close, tubular, scarious sheaths 52

51b. Peduncle not invested by close, tubular sheaths 55

52a. Leaf solitary, erect, elongate; lip mostly occupied by a large 5-lobulate callus .... *E. magnicallosum*

52b. Leaves several to numerous, distichous, often short; lip either naked or bicallose at the base 53

53a. Ovary with a conspicuous saccate vesicle at the summit just below the lip; leaves small, up to 4 cm. long .... *E. prostratum*

53b. Ovary without a saccate vesicle; leaves larger, 5–20 cm. long 54

54a. Stem flattened (except near the base); leaves neither fleshy nor vernicose, broadest in the middle or above the middle; lamina of the lip without a pair of basal calli .... *E. anceps*

54b. Stem terete; leaves fleshy, vernicose, commonly broadest below the middle; lamina of the lip with a pair of basal fleshy calli .... *E. rectopedunculatum*

55a. Leaves apparently subterete or semiterete; plants small 56

55b. Leaves with flattened blades; plants commonly large..................58

56a. Stems simple, or branched at the very base, more or less caespitose; inflorescence not subtended by a conspicuous erect spathe; flowers or flower-clusters distant on a strongly fractiflex rachis; lip transverse............57

56b. Stem loosely branched above; inflorescence subtended by a conspicuous, erect spathe, flowers loose on a straight or lightly flexuous rachis; lip not transverse...*E. minutiflorum*

57a. Plant about 11 cm. or less high; leaves 3.5 cm. or less long; flower-bearing branches abbreviated or obscure..........................*E. Schlimii*

57b. Plant about 16 cm. or more high; leaves commonly 4 cm. or more long; flower-bearing branches distinct, several-flowered.
E. Schlimii var. *gracillimum* (*E. gracillimum*)

58a. Flower-cluster subtended by one or more conspicuous spathes which are usually erect and larger than the floral bracts........................59

58b. Flower-cluster not subtended by conspicuous, erect spathes dissimilar to the floral bracts..66

59a. Inflorescence a strongly arcuate or nodding flower-cluster.............60

59b. Inflorescence an erect or suberect raceme.............................61

60a. Plant stout, stems about 10 mm. thick, simple; inflorescence paniculate.
E. frigidum (*E. macrodonax*)

60b. Plant slender, stem 4 mm. or less thick, simple or branching; inflorescence commonly racemose.........*E. frigidum* var. *stenophyton* (*E. stenophyton*)

61a. Floral bracts large, conspicuous, conduplicate, more or less surpassing the pedicellate ovary....................................*E. coriifolium*

61b. Floral bracts very small and inconspicuous, much shorter than the pedicellate ovary...62

62a. Lip strongly emarginate; flower large, lateral sepals commonly 15 mm. or more long...63

62b. Lip not emarginate; flowers smaller, lateral sepals 14 mm. or much less long..64

63a. Leaves short, oblong-elliptic to oval; spathe solitary, very broad; flowers few (5 or less), submembranaceous........................*E. orbiculatum*

63b. Leaves elongate, linear-oblong; spathes 2, narrow; flowers numerous (12 or more), coriaceous................................*E. grandiflorum*

64a. Disc of the lip with a large central callus; petals spatulate, rounded to acute at the apex...*E. mancum*

64b. Disc of the lip with 2 basal calli; petals linear or slightly broader above..65

65a. Lamina of the lip linear-oblong, obtuse..................*E. adenoglossum*

65b. Lamina of the lip cordate, acute........*E. ventricosum* (*E. pachygastrium*)

66a. Inflorescence paniculate..67

66b. Inflorescence racemose...70

67a. Leaves long-acuminate; branches of the panicle slender, elongate and erect or widely spreading; flowers minute..*E. micranthum* (*Amblostoma holochilum*)

67b. Leaves acute; branches of the panicle usually stout and short, more or less arcuate or recurved..68

68a. Plant slender; sheathed stem 3 mm. or less in diameter, usually branching; leaves linear, 6.6 cm. or less long, 4.5 mm. or less wide; panicle slender, few-branched....................................*E. gramineum*[1]

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[1] The characters assigned to *E. gramineum* were drawn from collections which are apparently referable to this species.

68b. Plant stout; sheathed stem 4.5 mm. or more in diameter; leaves ovate-lanceolate to linear-lanceolate, 10 mm. or more wide........................69

69a. Stem with short, erect branches near the base; leaf-sheaths merely rugose (not pustulose); panicle with few, not recurved, branches; sepals 8.2 mm. or more long..*E. aquaticoides*

69b. Stem simple; leaf-sheaths pustulose above; panicle with numerous, recurved branches; sepals about 6 mm. or less long.......................*E. frutex*

70a. Disc of the lip with a V-shaped callus at or near the base; plant much branched..*E. ramosum*

70b. Disc of the lip without a V-shaped callus..............................71

71a. Floral bracts conspicuous, broad and spathe-like or ancipitous, dorsally carinate, erect and clasping the pedicellate ovary........................72

71b. Floral bracts inconspicuous, neither spathaceous nor ancipitous, commonly wide-spreading...74

72a. Stems much branched, from an abbreviated rhizome; floral bracts scarious; lip strongly narrowed toward the apex....................*E. strobiliferum*

72b. Stems simple, from a more or less elongate rhizome; floral bracts foliaceous; lip not strongly narrowed toward the apex..........................73

73a. Lamina of the lip cordate-ovate to suborbicular, not transverse, 5.5 mm. or less wide; lateral sepals entirely ecarinate.....................*E. rigidum*

73b. Lamina of the lip cordate-reniform, transverse, 1.2 cm. or more wide; lateral sepals with a serrate keel near the apex...................*E. coriifolium*

74a. Lamina of the lip not distinctly narrowed toward the front, truncate or retuse at the apex...75

74b. Lamina of the lip distinctly narrowed toward the front................78

75a. Stems uniformly leafy throughout......................................76

75b. Stems and branches leafless below; leaves very variable in size, the upper ones approximate and commonly 5–17 cm. long, flat..................77

76a. Leaves small, 3.7 cm. or less long, equitant in the dried specimen. .*E. ardens*

76b. Leaves relatively large, 5.7–15 cm. long, flat. . . .*E. inamoenum* var. *robustum*

77a. Petals oblanceolate-linear or elliptic-linear, acute or subacute; lamina of the lip glabrous on both surfaces..........................*E. nephroglossum*

77b. Petals broadly cuneate-spatulate, obtuse to rounded at the apex; lamina of the lip densely cellular-papillose on both surfaces.........*E. latisegmentum*

78a. Flowers membranaceous; lamina of the lip lightly indented or retuse on each side...79

78b. Flowers fleshy or coriaceous; lamina of the lip not indented on each side. .80

79a. Stem simple or nearly so; flowers greenish-yellow; lip conspicuously apiclate..*E. subreniforme*

79b. Stem with numerous, short, strict branches; flowers rose-purple; lip without an apicule...........................*E. subreniforme* var. *ramosum*

80a. Raceme nodding or strongly reflexed...................................81

80b. Raceme erect or suberect, very rarely somewhat arcuate.............83

81a. Leaves elliptic; flowers relatively large, about 1.7 cm. long; lip replicate. *E. sarcostalix*

81b. Leaves linear or lanceolate-linear; flowers small, about 8.5 mm. or less long; lip concave..82

82a. Flowers 7–8.5 mm. long; lateral sepals with a prominent denticulate keel above.......................*E. frigidum* var. *stenophyton* (*E. stenophyton*)

82b. Flowers 4.8 mm. or less long; lateral sepals without a prominent denticulate keel . . . . *E. gramineum*[1]

83a. Flowers small, sepals 8 mm. or less long; lamina of the lip subcuneate to rounded at the base, shortly bicarinate near the base.
E. fimbriatum var. *rhomboglossum* (*E. rhomboglossum*, *E. integrilabium*)

83b. Flowers larger, sepals (when mature) 10 mm. or more long; lamina of the lip cordate or cordate-truncate at the base, either naked or bicallose below . . 84

84a. Leaves strict (rarely strictly ascending), small (up to 5 cm. long), the margins entirely cartilaginous-erose.
E. pachychilum (*E. aquaticoides* var. *pusillum*)

84b. Leaves conspicuously spreading, mostly larger, the margins chiefly entire . . 85

85a. Inflorescence shorter than the uppermost leaf; leaves obtuse, not narrowed to an acute apex . . . . *E. xylostachyum*

85b. Inflorescence longer than the uppermost leaf, usually much so; leaves acute . . 86

86a. Leaves elliptic to oval (rarely elliptic-oblong); anther long-rostrate; petals narrowly linear . . . . *E. rostrigerum*

86b. Leaves oblong-lanceolate; anther not long-rostrate; petals not narrowly linear 87

87a. Petals elliptic-lanceolate, little narrower than the sepals; lip provided with a thickened median line . . . . *E. dermatanthum*

87b. Petals linear to elliptic-linear, markedly narrower than the sepals; lip without a thickened median line . . . . *E. rigidiflorum*

88a. Inflorescences lateral, consisting of naked racemes on the leafy stem 89

88b. Inflorescences terminal (often at the apex of short lateral branches) 90

89a. Lateral lobes of the lip irregularly erose; mid-lobe of the lip obovate-reniform; petals spatulate or linear-spatulate; column nearly straight.
E. bambusiforme

89b. Lateral lobes of the lip entire; mid-lobe of the lip subquadrate; petals linear or oblanceolate-linear; column strongly deflexed in the middle . . *E. exaltatum*

90a. Peduncle below the inflorescence enveloped by several to many close sheaths which are commonly tubular and scarious; if the close sheaths are conduplicate, the peduncle is commonly strongly ancipitous 91

90b. Peduncle below the inflorescence not enveloped by several close, tubular, scarious sheaths; whatever sheaths occur are loose and commonly conduplicate, spathaceous and usually more or less spreading 113

91a. Basal portion of the lamina of the lip with entire margins 92

91b. Basal portion of the lamina of the lip crenulate to lacerate or lobulate . . . 94

92a. Flower-clusters densely flowered; mid-lobe of the lip transverse, i.e., broader than long 93

92b. Flower-clusters very loosely flowered; mid-lobe of the lip not transverse, triangular-linear to narrowly deltoid, very fleshy.
E. yatapuense (*E. laxum*, *E. macrothyrsis*)

93a. Peduncle terete or nearly so; disc of the lip bicallose at the base; leaves thickly fleshy, vernicose . . . . *E. rectopedunculatum*

93b. Peduncle ancipitous; disc of the lip ecallose; leaves subcoriaceous to coriaceous, dull . . . . *E. anceps*

94a. Apex of the lip terminating in a pair of linear, spreading lobules; inflorescence a divaricate, loosely flowered panicle . . . . *E. capricornu*

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[1] This species very rarely has simple racemes.

94b. Apex of the lip not terminating in a pair of linear, spreading lobules; inflorescence racemose or paniculate, commonly with densely flowered clusters. . 95

95a. Disc of the lip with a solitary, prominent central keel or thickened line between the basal calli. 96

95b. Disc of the lip without a solitary, prominent central keel or thickened line between the basal calli. 101

96a. Stem bulbose-thickened or fusiform-thickened at the base; lip conspicuously transverse, i.e., much broader than long.
E. Funkii (*E. brachycladium*, *E. crassipes*, *E. brachycladium* var. *crassipes*)

96b. Stem not noticeably thickened at the base; lip not conspicuously transverse, i.e., at most but little broader than long. 97

97a. Leaves linear or linear-oblong; petals twice as broad as the sepals; lateral lobes of the lip dwarf, often indistinct. . . . . *E. imatophyllum*

97b. Leaves oblong to oval; petals at most little broader than the sepals; lateral lobes of the lip well-developed, i.e., nearly as large as or larger than the mid-lobe. 98

98a. Lateral lobes of the lip deeply laciniate-incised; mid-lobe of the lip noticeably smaller, contracted below the apex. . . . . *E. cinnabarinum*

98b. Lateral lobes of the lip dentate to shallowly incised; mid-lobe of the lip usually subequally large. 99

99a. Mid-lobe of the lip sessile or without a prominent claw below the apical dilation. . . . . *E. ibaguense* var. *confluens* (*E. fulgens*, *E. calanthum*, *E. paytense*, *E. Filomenoi*)

99b. Mid-lobe of the lip with a prominent claw below the apical dilation. . . . 100

100a. Sepals and petals obtuse to acute; apex of the mid-lobe of the lip obtuse or retuse and without a prominent apicule.
E. ibaguense (*E. radicans*, *E. decipiens*, *E. huanucoense*)

100b. Sepals and petals acuminate; apex of the mid-lobe of the lip acute or with a conspicuous apicule. . . *E. ibaguense* var. *Schomburgkii* (*E. Schomburgkii*)

101a. Lip with 2 or 3 keels or fleshy ridges above the base. 102

101b. Lip without keels or fleshy ridges, but provided with variously shaped calli below. 105

102a. Mid-lobe of the lip rhombic, strongly acute; sepals 2 cm. or more long.
E. Weberbauerianum

102b. Mid-lobe of the lip oblong-obovate to obcordate, deeply bilobed; sepals 1.5 cm. or less long. 103

103a. Lateral lobes of the lip strongly reflexed, oval in outline; mid-lobe oblong-obovate, clawed, with the apical lobules porrect; flowers scarlet and yellow. . . . . *E. reflexilobum*

103b. Lateral lobes of the lip not reflexed, subquadrate or cuneate to dolabriform; mid-lobe obcordate, with the apical lobules spreading; flowers purple. . . 104

104a. Petals elliptic-lanceolate, 14 mm. long. . . . . *E. tricarinatum*

104b. Petals oblong-obovate, 8–12 mm. long. . . . . *E. macrocyphum*

105a. Mid-lobe of the lip entire, not transverse. *E. catillus*

105b. Mid-lobe of the lip crenate to lacerate, commonly dilated above. 106

106a. Mid-lobe ligulate-cuneate, 5-dentate in front. . . . . *E. panchrysum*

106b. Mid-lobe not ligulate-cuneate, apex usually truncate to retuse or bilobed. . 107

107a. Callus of the lip spreading onto the lateral lobes. 108

107b. Callus of the lip not spreading onto the lateral lobes. 111

108a. Mid-lobe of the lip 4-lobed; lateral divisions of the callus prostrate on the lateral lobes..*E. tricrure*

108b. Mid-lobe of the lip simple or more commonly bilobed; lateral divisions of the callus not markedly prostrate....................................109

109a. Lobes of the lip dentate-crenate; mid-lobe of the callus about reaching the middle of the mid-lobe................................*E. haematanthum*

109b. Lobes of the lip sharp-dentate to lacerate..........................110

110a. Callus of the lip relatively very large, almost reaching the apex of the mid-lobe, concave..*E. cochlidium*

110b. Callus of the lip smaller, not approaching the apex of the mid-lobe, not markedly concave........*E. dichotomum*[1] (*E. brachyphyllum, E. Lindenii, E. cuzcoense, E. tarmense, E. inconstans*)

111a. Lateral lobes of the lip retrorse; flowers fleshy...........*E. Giroudianum*

111b. Lateral lobes of the lip not retrorse...................................112

112a. Callus of the lip hippocrepiform, lobulate, depressed; flowers small, sepals about 6 mm. long; lateral lobes of the lip obliquely triangular-ovate. *E. gracilicaule*

112b. Callus of the lip not hippocrepiform, ovate or ovate-oblong in outline; flowers commonly larger; lateral lobes of the lip not triangular-ovate. *E. xanthinum*[2]

113a. Flower-cluster 1-flowered or subumbellate with an abbreviated rachis..114

113b. Flower-cluster neither 1-flowered nor subumbellate, either racemose or paniculate, with a distinct rachis.................................124

114a. Mid-lobe of the lip linear to lanceolate..............................115

114b. Mid-lobe of the lip not linear to lanceolate..........................118

115a. Plant dwarf, 7.5 cm. or less high; stems commonly much branched; leaves horizontally spreading....................................*E. nanum*

115b. Plant tall, 14 cm. or much more high (including the flowers); stems always simple; leaves not horizontally spreading...........................116

116a. Lateral lobes of the lip deeply lacerate-fimbriate..........*E. criniferum*

116b. Lateral lobes of the lip not deeply lacerate-fimbriate, at most denticulate..117

117a. Plant slender; leaves linear to elliptic-linear, strict; sepals 2.5–3.5 cm. long. *E. nocturnum* var. *minus* (*E. longicolle*)

117b. Plant usually stout; leaves oblong to oval, spreading; sepals mostly 4 cm. or more long..*E. nocturnum*

118a. Plant dwarf, up to 4.5 cm. tall; lower portion of the lip lacerate-dentate. *E. laceratum*

118b. Plant not dwarf; lower portion of the lip more or less entire...........119

119a. Lip longer than broad (not transverse); mid-lobe ovate. *E. geminiflorum* (*E. cajamarcae*)

119b. Lip broader than long (transverse)..................................120

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[1] This concept is very variable in respect to the degree of laceration of the lip and to the size and lobing of the callus and may prove to include *E. cochlidium.* In similar status appear to be *E. tricrure* and *E. haematanthum.* However, since we lack typical material of these concepts, it seems unwise to attempt reduction.

[2] This species probably includes the concepts *E. incisum* Reichb. f. & Warsc., *E. xytriophorum* Reichb. f. & Warsc. and *E. macropodum* Reichb. f., which, although represented in the Ames herbarium by records of the type collections with floral analyses, seem to defy satisfactory separation.

120a. Stems branched (commonly much so); racemes numerous, peduncled, spreading or nodding..121

120b. Stems simple, commonly caespitose; racemes solitary...............122

121a. Lobes of the lip more or less obtuse, with the mid-lobe retuse...*E. soratae*

121b. Lobes of the lip acute, subequal...........................*E. physopus*[1]

122a. Leaf solitary..*E. unifoliatum*

122b. Leaves several to numerous.......................................123

123a. Flowers congested, without a distinct rachis................*E. difforme*

123b. Flowers not congested, with a distinct, if short, rachis.....*E. inamoenum*

124a. Lower portion of the lamina of the lip deeply divided to fimbriate or lacerate..125

124b. Lower portion of the lamina of the lip not deeply divided to fimbriate..128

125a. Lamina of the lip subsimple to trilobulate.........................126

125b. Lamina of the lip deeply 3- or more-lobed..........................127

126a. Plant slender, leaves 8 mm. or less wide; lateral sepals 7–8 mm. long. *E. blepharichilum*

126b. Plant stout, leaves 12 mm. or more wide; lateral sepals 10–15 mm. long. *E. blepharichilum* var. *majus*

127a. Sepals acuminate; terminal lobe of the lip narrowly linear and entire. *E. criniferum*

127b. Sepals obtuse to acute; terminal lobe of the lip cuneate and bilobed at the apex..........................*E. cristatum* (*E. raniferum*, *E. validum*)

128a. Bracts of the inflorescence large, papyraceous and imbricating, concealing the rachis; lip subtrilobed, altogether crenate..........*E. arundinaceum*

128b. Bracts of the inflorescence neither large and papyraceous, nor imbricating, nor concealing the rachis..129

129a. Peduncle without sheaths below the inflorescence, sometimes with a few inconspicuous bracts...130

129b. Peduncle with one or more loose sheaths or spathes (usually prominent) below the inflorescence; sometimes these are evanescent (cf. *E. gladiatum*)...150

130a. Mid-lobe of the lip transverse, i.e., much broader than long..........131

130b. Mid-lobe of the lip not transverse, i.e., longer than broad...........137

131a. Anterior portion of the lip much narrower than the basal portion.....132

131b. Anterior portion of the lip almost as broad as the basal portion or broader.134

132a. Lip adnate to the column only at the base; leaves linear...*E. subliberum*

132b. Lip adnate to the column nearly or quite to the apex; leaves oblong to elliptic...133

133a. Inflorescence much longer than the leaves, loosely paniculate and many-flowered; lamina of the lip more or less distinctly 3-lobed.....*E. crassum*

133b. Inflorescence abbreviated, subequaling the leaves or shorter, racemose and few-flowered; lamina of the lip subsimple................*E. subreniforme*

134a. Disc of the lip traversed by 3 approximate, fleshy keels or ridges produced between the 2 basal calli; mid-lobe extended into a pair of widely diverging to retrorse narrow lobules..135

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[1] It seems highly probable that this concept is synonymous with the variable *E. soratae*, but without a chance to examine actual flowers, reduction appears unwise.

134b. Disc of the lip not traversed by 3 approximate, fleshy ridges; mid-lobe not extended into a pair of narrow lobules..............................136

135a. Flowers relatively large, sepals 8.2 mm. or more long; basal callus bilobed. *E. paniculatum* (*E. floribundum*)

135b. Flowers very small, sepals 5 mm. long; basal callus trilobulate. *E. paniculatum* var. *linearifolium*

136a. Leaves linear, 18 cm. or more long; racemes arcuate-decurved, much shorter than the upper leaves; petals elliptic..................*E. bambusaceum*

136b. Leaves ovate-elliptic or oblong-elliptic, 3.5 cm. or less long; racemes erect, surpassing the upper leaves; petals narrowly oblanceolate....*E. Philippii*[1]

137a. Pedicellate ovary tomentose..................................138

137b. Pedicellate ovary glabrous....................................139

138a. Leaves shortly oblong or elliptic-oblong; floral bracts about half as long as the pedicellate ovary or more; mid-lobe of the lip slightly broader than long (near the apex)....................................*E. pubiflorum*

138b. Leaves linear to oblong-lanceolate; floral bracts much shorter than the pedicellate ovary; mid-lobe of the lip distinctly longer than broad. *E. lanipes*

139a. Rachis of the raceme ancipitous below; leaves confined to the upper portions of the stems or branches.............................140

139b. Rachis of the raceme (or panicle) not ancipitous below; leaves commonly distributed throughout the stem..............................141

140a. Floral bracts many times shorter than the pedicellate ovary; flowers membranaceous; mid-lobe of the lip well developed...........*E. oligophyllum*

140b. Floral bracts equaling the pedicellate ovary; flowers very coriaceous; mid-lobe of the lip reduced to a small tooth......................*E. Lechleri*[2]

141a. Inflorescence paniculate......................................142

141b. Inflorescence racemose..144

142a. Leaves elongate-linear; stem fusiform; mid-lobe of the lip narrowed above with an acute apex..*E. purum*

142b. Leaves oblong-lanceolate to ovate; stem not fusiform; mid-lobe of the lip truncate or retuse (and often apiculate) above....................143

143a. Leaf-sheaths glabrous; sepals about 15 mm. or more long. *E. Haenkeanum* (*E. juninense*)

143b. Leaf-sheaths conspicuously rough or pustulose; sepals about 9 mm. or less long..............................*E. scabrum* (*E. cardiophyllum*)

144a. Sheathed stems conspicuously pustulose-scabrous; leaves ovate to ovate-lanceolate, sharply acute or short-acuminate................*E. scabrum*

144b. Sheathed stems not pustulose (at most rugose); leaves not ovate, if ovate-lanceolate then strongly obtuse.................................145

145a. Lateral sepals terminating in a long, fleshy cusp...........*E. birostratum*

145b. Lateral sepals not terminating in a long cusp.....................146

146a. Flowers relatively large, sepals 16 mm. or more long................147

146b. Flowers relatively small, sepals 11 mm. or less long................148

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[1] The position of this species in the key was determined from a record of the type in the Reichenbach Herbarium.

[2] Of this species I have seen only a rough drawing in which the floral details are obscure.

147a. Petals much narrower than the sepals; mid-lobe of the lip much larger than the lateral lobes.......................................*E. elatum*

147b. Petals about as broad as the sepals or broader; mid-lobe of the lip much smaller than the lateral lobes...............*E. inamoenum* var. *robustum*

148a. Stems simple, stout (commonly 6 mm. or more across the leaf-sheaths); lip with a pair of fleshy ridges below and a median thickening above. *E. inamoenum*

148b. Stems branched (commonly much so), slender (about 5 mm. or less across the leaf-sheaths); lip sharply 3-lobed.............................149

149a. Racemes surpassing the leaf; floral bracts broadly ovate, subremote; flowers fleshy.......................................*E. carnosiflorum*

149b. Racemes shorter than the leaf or leaves; floral bracts narrowly lanceolate, approximate; flowers membranaceous...................*E. fruticulus*

150a. Mid-lobe of the lip distinctly narrowed near or below the apex, linear-lanceolate to ovate in outline, commonly acute or acuminate.........151

150b. Mid-lobe of the lip not distinctly narrowed above, often cuneate, retuse or divaricately bilobed.......................................162

151a. Inflorescence consisting of several pendent racemes issuing from large falcate spathes..........................*E. Ruizianum* (*E. spathaceum*)

151b. Inflorescence consisting of a single raceme or panicle; peduncle with 1–3 spathes...152

152a. Pedicellate ovary elongate, 3.2 cm. or more long..................153

152b. Pedicellate ovary relatively short, about 2 cm. or less long...........154

153a. Flowers green and white; sepals 3 cm. long; rachis of the inflorescence few-flowered, much shorter than the leaves..................*E. euspathum*

153b. Flowers purplish crimson; sepals 2.2 cm. or less long; rachis of the inflorescence many-flowered, commonly much surpassing the leaves. *E. Friderici-Guilielmi*

154a. Leaves ovate or oblong-ovate to oblong-elliptic, commonly 2 cm. or more wide...155

154b. Leaves linear or oblong to lanceolate or elliptic-lanceolate, commonly 1.9 cm. or less wide...157

155a. Peduncle entirely concealed by 2 or 3 erect, imbricating spathes; raceme dense; lobes of the lip subequal........................*E. strictiforme*

155b. Peduncle with one small spathe; raceme (or panicle) not densely flowered..156

156a. Lateral lobes of the lip much larger than the mid-lobe, dentate. *E. mesomicron*

156b. Lateral lobes of the lip not much larger than the mid-lobe, nearly entire. *E. ampliracemum*

157a. Inflorescence short, up to 6 cm. long..............................158

157b. Inflorescence elongate, commonly 10 cm. or more long; mid-lobe of the lip acute or acuminate..159

158a. Leaves linear, acute, 8–12 cm. long; flowers loose; lip ovate in outline, 3-lobed near the base.................................*E. panicoides*

158b. Leaves lanceolate or linear-lanceolate, acuminate, 6 cm. or less long; flowers dense; lip obovate in outline, 3-lobed in front...........*E. smaragdinum*

159a. Flowers very small, sepals 5 mm. or less long; lamina of the lip with a single large, ovate callus between the lateral lobes...............*E. armeniacum*

159b. Flowers larger, sepals about 7 mm. or more long; lip without a single ovate callus between the lateral lobes..................................160

160a. Stem branching below; mid-lobe of the lip ovate or broadly ovate. *E. brachyglossum*

160b. Stem simple; mid-lobe of the lip linear-lanceolate, linear-triangular or triquetrous...161

161a. Lateral lobes of the lip subquadrate, provided with a triangular, prostrate, extrorse callus; leaves narrowly linear, up to 8 mm. wide...*E. glossoceras*[1]

161b. Lateral lobes of the lip rounded, transversely oblong-elliptic to semiorbicular, without a triangular, extrorse callus. *E. cornutum* (*E. anthoceros, E. Pavonianum, E. melinoacron*)

162a. Terminal lobe of the lip not transverse, i.e., longer than broad or slightly broader than long in greatest width..............................163

162b. Terminal lobe of the lip markedly transverse, i.e., broader than long...174

163a. Spathes on the peduncle large, prominent, foliaceous, strict, commonly obtuse or subacute..164

163b. Spathes on the peduncle small, mostly inconspicuous and scarious, attenuate above..170

164a. Inflorescence racemose.......................................165

164b. Inflorescence paniculate, diffuse...............................169

165a. Lateral lobes of the lip narrow, antrorsely falcate..................166

165b. Lateral lobes of the lip broad, rounded or dolabriform...............167

166a. Leaves oblong-lanceolate; inflorescence strictly erect; apex of the lip divided into a pair of subrounded lobules................*E. cylindraceum*

166b. Leaves linear or ligulate; inflorescence arcuate to nodding; apex of the lip not divided into a pair of subrounded lobules..........*E. cylindrostachys*

167a. Leaves markedly attenuate toward the apex; sepals merely acute. *E. modestum*

167b. Leaves not attenuate above, rounded to acute.....................168

168a. Inflorescence elongate, 24 cm. or more long, densely many-flowered; lateral sepals abruptly acuminate.........................*E. raphidophorum*

168b. Inflorescence short, 9.5 cm. or less long, loosely few- (up to 13-) flowered; sepals acute.............................*E. refractoides* var. *humile*

169a. Leaves oblong, not conspicuously narrowed above, excised at the broadly rounded apex; mid-lobe of the lip cuneate, usually prominently dilated above, exapiculate or with a short, inconspicuous apicule in the middle. *E. excisum*

169b. Leaves prominently attenuate above, without an excised apex; mid-lobe of the lip not prominently dilated above, with a conspicuous apicule in the middle..*E. modestum*

170a. Leaves linear or oblong-linear, essentially with parallel sides, commonly fleshy..171

170b. Leaves oblong-lanceolate to elliptic, without parallel sides, subcoriaceous or coriaceous..172

171a. Raceme always solitary; rachis stout; lateral sepals terminating in a prominent fleshy cusp; lip with a large, fleshy, ovate and depressed callus in the center...*E. birostratum*

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[1] This species, of which I have seen only a drawing with floral analysis from the Reichenbach Herbarium, may prove to be a form of the variable *E. cornutum*, although this species is said to have flowers only one third as large as those of *E. cornutum*.

171b. Racemes usually fascicled; rachis slender; lateral sepals not terminating in an elongate cusp; lip with a pair of small calli at the base.
E. gladiatum (*E. vandifolium, E. Juergensenii*)

172a. Mid-lobe of the lip deeply divided into a pair of suborbicular or rounded-oblong, spreading lobules; inflorescence a loosely flowered, commonly elongate, pendent raceme.
E. moyobambae (*E. subpatens, E. benignum, E. amazonicum*)

172b. Mid-lobe of the lip not deeply divided into a pair of spreading lobules, at most retuse; inflorescence a short, lax raceme or a spreading panicle...173

173a. Leaf-sheaths pustulose-scabrous; inflorescence subequaling the leaves; lateral lobes of the lip smaller than the mid-lobe.................*E. Lima*

173b. Leaf-sheaths smooth; inflorescence conspicuously surpassing the leaves; lateral lobes of the lip larger than the mid-lobe.
E. Haenkeanum (*E. juninense*)

174a. Mid-lobe of the lip obcordate or divided into a pair of rounded or oblong-rounded lobules...175

174b. Mid-lobe of the lip not obcordate nor divided into a pair of rounded lobules..177

175a. Leaf-sheaths finely pustulose-scabrous; rachis of the inflorescence shorter than or subequaling the leaves, racemes single or several and fascicled.
E. Tessmannii

175b. Leaf-sheaths smooth; rachis of the inflorescence commonly much longer than the leaves...176

176a. Inflorescence erect, loosely paniculate, subtended by a prominent loose spathe...*E. tenuispathum*

176b. Inflorescence nodding, laxly racemose, with 1 to several, usually minute sheaths at the base.
E. moyobambae[1] (*E. subpatens, E. benignum, E. amazonicum*)

177a. Leaves broadly obtuse to rounded at the apex, oblong-elliptic to elliptic-ovate or oval...178

177b. Leaves acute to acuminate; lip sharply 3- or more-lobed............179

178a. Plant small, about 19 cm. or less tall; peduncle with but 1 spathe; inflorescence a simple raceme; mid-lobe of the lip distinct.
E. refractoides var. *humile*

178b. Plant tall, about 57 cm. high; peduncle with 3 spathes; inflorescence an elongate, virgate panicle; mid-lobe of the lip indistinct.....*E. refractoides*

179a. Lamina of the lip broadly cuneate toward the base, sharply 3-lobed in front, disc without a large ovate callus; inflorescence nodding, shorter than the leaves...*E. smaragdinum*

179b. Lamina of the lip rounded to cordate at the base (if narrowed toward the base, the disc provided with a large ovate callus or a cluster of 3 approximate keels); inflorescence erect or somewhat decurved.............180

180a. Disc of the lip with a pair of elongate, spreading, complanate calli at the base and a median fleshy-thickened line; mid-lobe of the lip shallowly transverse-oblong or reniform, not cuneate...............*E. liguliferum*

180b. Disc of the lip without a pair of elongate, spreading basal calli, or, if so, with 3 approximate, fleshy, median ridges; mid-lobe of the lip transverse-cuneate or divaricately bilobed.................................181

181a. Center of the disc of the lip occupied by a single large, ovate callus....182

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[1] Rarely the rachis of the raceme is about equal to the leaves.

181b. Center of the disc of the lip occupied anteriorly by 3 approximate, fleshy ridges, and basally by a pair of calli or by a bilobed or trilobed callus; mid-lobe of the lip a little narrower to much broader than the lateral lobes. . 183

182a. Mid-lobe of the lip entire, small, transversely cuneate . . . . . . *E. Macbridei*

182b. Mid-lobe of the lip deeply bilobed, consisting of a pair of divaricate, linear or lanceolate-linear lobules . . . . *E. capricornu*

183a. Mid-lobe of the lip with a distinct quadrate claw; lateral lobes with a concave posterior margin . . . . *E. paniculatum* var. *unguiculatum*

183b. Mid-lobe of the lip sessile or subsessile; lateral lobes with a more or less convex posterior margin 184

184a. Flowers relatively large, sepals 8.2 mm. or more long; basal callus bilobed. *E. paniculatum* (*E. floribundum*)

184b. Flowers very small, sepals 5 mm. long; basal callus trilobulate. . *E. paniculatum* var. *linearifolium* (*E. parviflorum*, *E. gratiosum*, *E. gratiosum* var. *linearifolium*, *E. patulipetalum*)

Epidendrum acuminatum Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 248. 1798.

Junín: Prov. of Tarma, Huassa-Huassi, toward the Siusa River, on rocks in mountains, *Pavón s.n.*—Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 145. 1921. Also Ecuador, fide Schlechter, Fedde Repert. Beih. 8: 134. 1921.

This species, of which we have a photograph of the type specimen, is probably identical with the more adequately represented *E. cornutum* Lindl.

Epidendrum adenoglossum Lindl. Hook. Journ. Bot. 3: 86. 1841; Fol. Orch. Epidendrum 45, no. 139. 1853.

Stem stout, distichously leafy (incomplete in the type). Leaves distichous, linear-oblong to elliptic-linear, broadly obtuse, up to 15 cm. long and 2 cm. wide, clasping at the base, widely spreading. Inflorescence terminal, simple, flexuose, racemose, about 17 cm. long; peduncle clothed with a prominent, ancipitous spathe about 5.5 cm. long. Raceme rather densely many-flowered, about 10 cm. long. Flowers small. Dorsal sepal ovate, acute, about 5 mm. long. Lateral sepals somewhat larger, obliquely ovate or elliptic-ovate, acute. Petals linear-oblanceolate, acute. Lip adnate to the column up to its apex; lamina simple, linear-oblong, obtuse, the basal half provided with a pair of lamellate calli and a smaller one projecting between them. Column short, clavate.

Peru: Near Pangoa, *Mathews 1073* (type).—Loreto, fide Schlechter, Fedde Repert. Beih. 9: 145. 1921.

Description compiled chiefly from a photograph of the type bearing a floral analysis, from the Lindley Herbarium.

Epidendrum aggregatum Lindl. Hook. Journ. Bot. 3: 84. 1841; Fol. Orch. Epidendrum 92, no. 296. 1853.

Stem slender or stout, apparently tall (incomplete in the type and in the specimen seen), entirely concealed by leaf-sheaths. Leaves numerous, distichous, linear-lanceolate, narrowly oblong-lanceolate or elliptic-lanceolate, up to 15.3 cm. long and 2.7 cm. wide, acuminate, deeply clasping at the base, the lower blades much smaller. Inflorescences lateral from the stem between the leaves, abbreviated, few-flowered (corymbose), subtended by several short, imbricating sheaths. Flowers medium-sized, long-pedicelled, with revolute segments. Dorsal sepal elliptic-lanceolate, acute, about 12 mm. long. Lateral sepals a little larger, obliquely elliptic-lanceolate, acute. Petals oblanceolate-spatulate. Lip adnate to the column up to its apex; lamina simple, suborbicular, deeply cordate below, bilamellate at the base, about 7.5 mm. long and broad.

Peru: Habitat not recorded, *Mathews 1901* (type).—Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 145. 1921. Also Colombia.

This description was prepared from a photograph of the type, in addition to a Colombian collection referred to this species (*von Schneidern 855*).

Epidendrum ampliracemum C. Schweinf. Am. Orch. Soc. Bull. 21: 682, t., 1952. Figure 75.

Plant large, about 42 cm. high (the basal portion incomplete in our specimen). Stem decumbent below, entirely concealed by tubular leaf-sheaths which are scarious below and green and leaf-bearing above. Leaves few (about 4), distichous, spreading, elliptic to elliptic-oblong, rounded at the apex and at the amplexicaul base, variable in size, up to 13.2 cm. long and 4.4 cm. wide (the apical blade). Inflorescence strict, racemose above, about 19 cm. long; peduncle with a small, scarious sheath below the middle; raceme subdensely many-flowered, about 15.2 cm. long. Flowers medium-sized, rather fleshy, with spreading segments. Floral bracts small, distinct, narrowly triangular-lanceolate. Pedicellate ovary, up to 2 cm. long. Dorsal sepal (when expanded) oblanceolate, subacute or obtuse and dorsally mucronate, about 18 mm. long. Lateral sepals equally long but slightly wider, obliquely oblong-oblanceolate, sharply acute. Petals about as long as the sepals, obliquely linear-oblanceolate, subacute to obtuse. Lip adnate to the column up to its apex; lamina conspicuously 3-lobed; lateral lobes reduplicate in natural position, suborbicular-dolabriform, with obscurely irregular margins, about 4.7 mm. long and 6 mm. wide; mid-lobe subquadrate-ovate, abruptly subacute, somewhat smaller than the lateral lobes; disc bicallose at the base, with a central thickened line extending nearly to the tip. Column large, arcuate, dilated above, up to 13 mm. long.

Huánuco: Carpish Pass, 84 km. from Tingo María, on highway to Lima, about 2750 meters, *Allard 21002a*.

Epidendrum anceps Jacq. Select. Stirp. Amer. Hist. 224, t. 138. 1763; Cogn. Martius Fl. Bras. 3, pt. 5: 114. 1898. *Epidendrum fuscatum* Sm. Spicil. Bot. 21: t. 23. 1792.

Plant small to large, caespitose from an abbreviated rhizome, about 12 cm.–10 dm. tall, very variable throughout. Stem compressed, leafy except at the base,

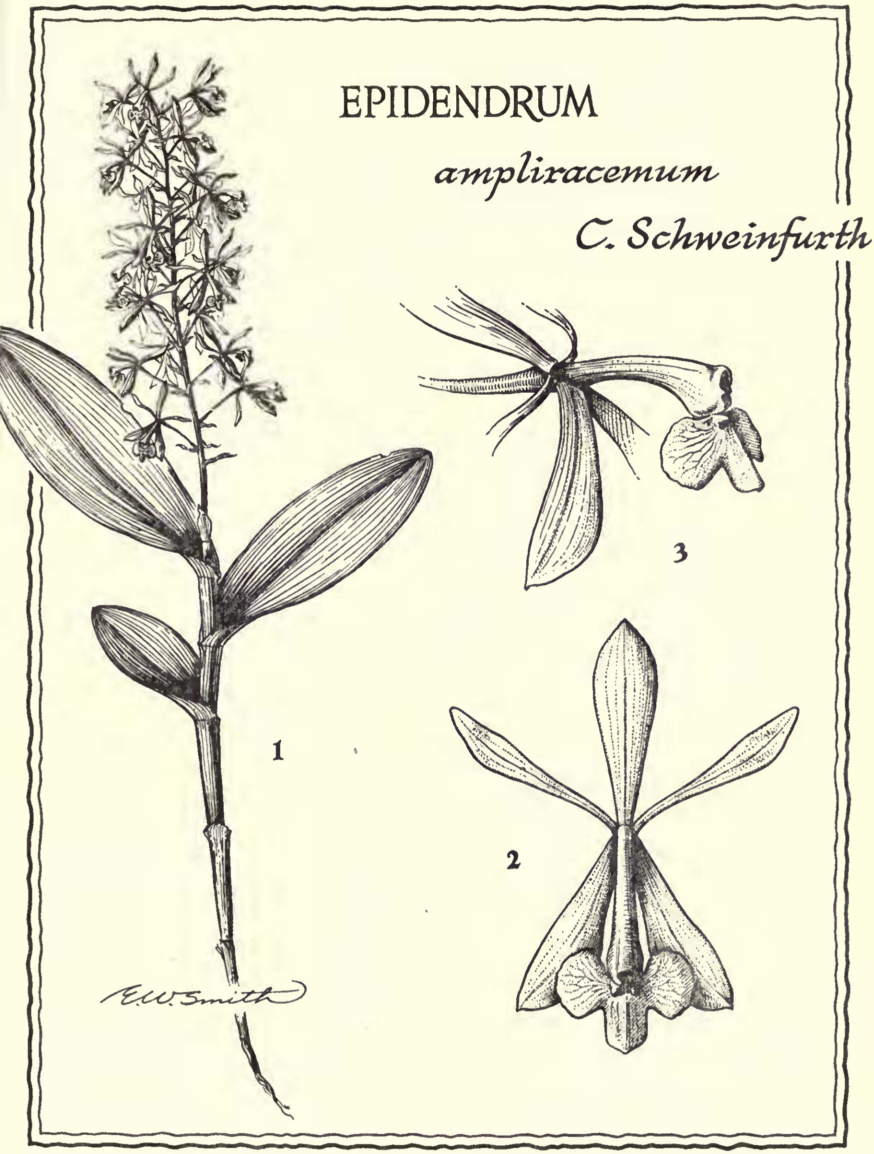

EPIDENDRUM
ampliracemum
C. Schweinfurth
E.W. Smith
1
2
3

FIG. 75. *Epidendrum ampliracemum* C. Schweinf. 1, plant; × ⅓. 2, flower, expanded; × 1½. 3, column, lip and a lateral sepal, three quarters view; × 1½.

entirely concealed by sheaths. Leaves distichous, few to numerous, linear-elliptic (rarely linear-oblong) to oblong or oval, often broader above the middle, up to 22 cm. long and 4.3 cm. wide, acute, obtuse or rounded at the apex. Inflorescence terminal, commonly elongate and more or less surpassing the leaves, enveloped by several long, close, compressed sheaths, bearing one or several compact, more or less distant, subcapitate racemes. Flowers small, green, greenish brown, reddish, yellowish or lavender, more or less fleshy. Dorsal sepal oblong-obovate to elliptic, shortly acuminate to subobtuse, up to 7.2 mm. (rarely 10 mm.) long. Lateral sepals obliquely ovate-elliptic, elliptic-obovate or obovate-oblong, shortly acuminate to subobtuse, commonly slightly broader than the dorsal sepal. Petals linear to oblanceolate-linear or elliptic-linear, acute to truncate-obtuse. Lip adnate to the column nearly to its apex; lamina cordate-reniform or cordate-ovate in outline, more or less sharply 3-lobed, 2–6 mm. long, 3.5–7.8 mm. wide; lateral lobes rounded or subquadrate; mid-lobe transversely oblong to quadrate, truncate-retuse and commonly apiculate at the apex (rarely broadly ovate and obtuse); disc fleshy, smooth and without calli. Column sigmoid, dilated above.

Huánuco: Prov. of Huánuco, Tingo María, epiphyte in forest, *Asplund 13199.*—Junín: Río Paucartambo Valley, near Perene Bridge, 700 meters, epiphyte in dense forest, *Killip & Smith 25253.*—Loreto: Vicinity of Iquitos, 100 meters, epiphyte on river side, *Klug 10039.*—San Martín: Pongo de Cainarachi, Río Cainarachi, tributary of Río Huallaga, about 230 meters, in forest, *Klug 2602.* A widespread and variable species extending from Florida (U.S.A.), the West Indies (type of *E. anceps* and *E. fuscatum*) and Central America through Colombia and Venezuela to Brazil and Peru.

Epidendrum aquaticoides C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 81, t. 12. 1943. Figure 76.

Plant robust, epiphytic, up to 60 cm. or more tall including the inflorescence. Stem stout, with two short ascending branches near the base, entirely concealed by tubular, striate, imbricating sheaths which are leaf-bearing except at the base of the stem and branches. Leaves numerous, distichous, ovate-lanceolate or ovate-oblong, subacute and mucronate, clasping at the base, up to 8.8 cm. long and 2 cm. wide (often much smaller), coriaceous, rigidly suberect. Inflorescence terminal, arcuate-flexuous, about 16 cm. long, paniculate with ascending few- to several-flowered branches; rachis more or less fractiflex. Floral bracts spreading, ovate, acuminate, concave, slightly shorter than the pedicellate ovary. Flowers small, rather loose, numerous, fleshy, orange-red. Dorsal sepal elliptic-ovate, subobtuse, about 8.2 mm. long. Lateral sepals obliquely and broadly ovate, acute, distinctly larger than the dorsal sepal. Petals linear or oblanceolate-linear, obtuse, shorter than the dorsal sepal. Lip adnate to the column up to its apex; lamina concave-conduplicate and surrounding the apex of the column in natural position, simple, broadly ovate-cordate when expanded, obtuse, about 6.3 mm. long in the middle and almost 10 mm. wide if spread out; disc with a pair of small, fleshy, complanate calli at the base. Column stout, strongly dilated upward in front, terminating on each side in a very oblique, transverse, retuse auricle, about 5.2 mm. long at the back.

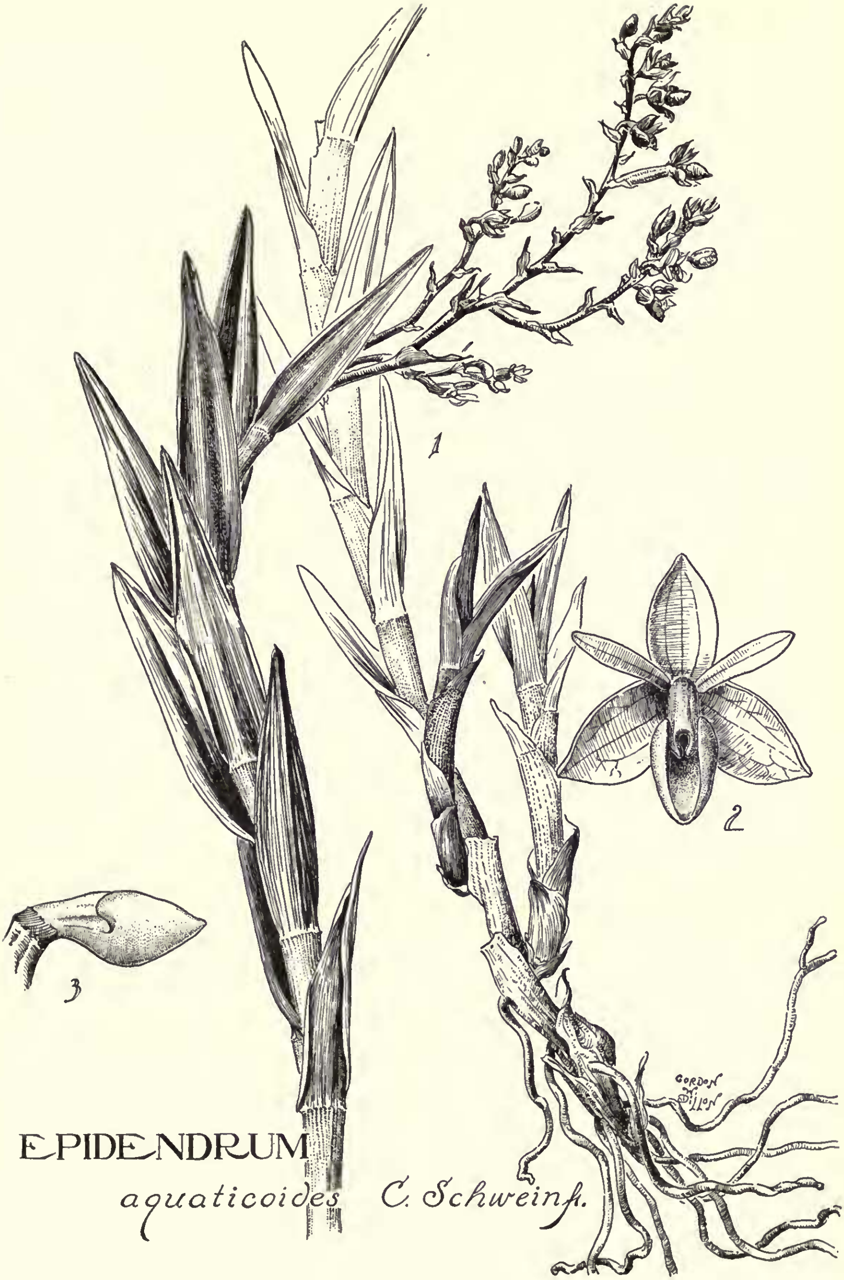

1
2
3
EPIDENDRUM
aquaticoides C. Schweinf.
GORDON W. DILLON

FIG. 76. *Epidendrum aquaticoides* C. Schweinf. 1, plant; × ½. 2, flower, from above, expanded; × 2. 3, lip and column from side; × 2.

Cuzco: Prov. of Urubamba, on trail from Puyupata to Sayacmarca, 3600 meters, *Vargas 2906*.

Epidendrum ardens Kränzl. Engler Bot. Jahrb. 37: 526. 1906.

Plant stout, up to 40 cm. tall. Stem simple below, commonly somewhat branched above, more or less entirely concealed by leaf-sheaths. Leaves numerous, distichous, short, usually equitant and recurved in the dried specimen, strongly clasping below, ovate to oblong-lanceolate when expanded, acute or apiculate from a dorsal keel, up to 3.4 cm. long and 1.2 cm. wide when expanded. Inflorescence a several- to many-flowered raceme which is loose below and dense above, up to 6 cm. long, erect to nodding, with an abbreviated and naked peduncle. Floral bracts lanceolate, acuminate, about equaling or surpassing the pedicellate ovary, spreading. Flowers small, scarlet to orange-yellow. Dorsal sepal oblanceolate-oblong or elliptic-lanceolate, navicular, complicate-acute, up to 10 mm. long. Lateral sepals slightly larger, obliquely oblong-oblanceolate, navicular, alate-carinate with the keel produced into a mucro. Petals oblanceolate-linear to cuneate-oblanceolate, acute, slightly oblique, a little shorter than the dorsal sepal. Lip adnate to the column up to its apex; lamina "suborbicular" to cordate-reniform, slightly emarginate and often apiculate in the middle, with the margins irregularly crenulate, up to 7 mm. in greatest length (including a broad auricle) and 10.2 mm. wide; disc bicallose at the base, with a short median thickened line. Column long, almost equaling the sepals, narrowly winged on each side, up to 9 mm. long.

Cuzco: Beyond Yanamanche, road from Cuzco to Santa Ana, 3300–3400 meters, in stream-side thickets consisting of sclerophyllous and thin-leaved vegetation, *Weberbauer 4978* (type). Paucartambo, Tres Cruces, 3600 meters, epiphyte, *Vargas 2054*. Prov. of Urubamba, near Wenner Gren ruins, 3400–3600 meters, in wet sphagnum on trees, *Metcalf 30748, 30751*. "Valle de Santa Ana, alturas del Chaco," *Herrera 2113, 2124* (Bues coll.).

Epidendrum armeniacum Lindl. Bot. Reg. 22: t. 1867. 1836; Fol. Orch. Epidendrum 49, no. 153. 1853; Cogn. Martius Fl. Bras. 3, pt. 5: 92. 1898. *Encyclia macrostachya* Poepp. & Endl. Nov. Gen. ac Sp. 2: 11, t. 114. 1838.

Plant small, slender, up to 30 cm. high, with an abbreviated rhizome. Stems numerous, caespitose, up to 24 cm. long (usually much less), terete below, compressed above, entirely covered with sheaths, loosely 2- to 5-leaved above. Leaves distichous, elliptic-linear to oblong-linear or linear-lanceolate, acute to acuminate, cuneate and clasping below, up to 14 cm. long and 16 mm. wide (the lower blades much smaller). Inflorescence terminal, up to 18 cm. long, erect or arcuate; peduncle bearing 1–2 prominent, compressed, commonly imbricating spathes; raceme densely many-flowered, up to 11 cm. long; floral bracts slender, surpassing the pedicellate ovary. Flowers minute, yellow-green to orange. Dorsal sepal ovate-lanceolate, acuminate, up to 4 mm. long. Lateral sepals obliquely ovate-lanceolate, acuminate, a little larger than the dorsal sepal. Petals narrowly linear, often slightly dilated above, acute. Lip adnate to the column up to its apex; lamina fleshy, sharply 3-lobed, up to 2.8 (4) mm. in greatest length; lateral lobes basal, auriculate, rounded to subquadrate, erect; mid-lobe narrowly triangular or linear-triangular; disc with a large ovate, excavated callus between the lateral lobes. Column very short and stout, dilated upward, 2 mm. or less long at the back.

Cuzco: Prov. of Convención, Valle Lucumayo, Amaibamba, 1700 meters, epiphyte, *Vargas 4227*.—Huánuco: Toward Cuchero (Cochero), epiphyte in transandine woods, *Poeppig 1585* (type of *Encyclia macrostachya*).—San Martín: San Roque, 1350–1500 meters, in "rough pasture," *Williams 7422*. Also Brazil (type of *Epidendrum armeniacum*) and Bolivia.

Epidendrum arundinaceum Lehm. & Kränzl. Engler Bot. Jahrb. 26: 471. 1899.

Plant tall, about 10.8 dm. high, from a stout, woody rhizome. Stem about 93.5 cm. high, leafless below but covered by close, scarious, evanescent sheaths, toward the apex provided with 3 to 6 leaves. Leaves loose, distichous, linear-lanceolate, long-acuminate, cuneate below to a clasping base, up to 25.8 cm. long and 2 cm. wide. Inflorescence a large virgate panicle (rarely a raceme), about 30 cm. high. Rachis almost entirely concealed by large, whitish, paleaceous, imbricating, sheath-like bracts. Flowers rather large for the genus, with reflexed sepals and petals. Sepals linear-oblong from a slightly narrower base, acute, about 2 cm. long, the lateral ones oblique. Petals linear or oblanceolate-linear, acute, a little shorter than the sepals. Lip adnate to the column up to its apex; lamina entire or subtrilobed, cochleate, ovate-reniform in outline, broadly rounded in front, deeply cordate at the base, with the margins (except at the apex and base) erose-crenate, about 1.3 cm. long from the tip of a basal auricle to the apex of the lamina and about as wide when expanded; disc bicallose at the base with 3 thickened lines above. Column elongate, arcuate, slightly dilated above, about 1.3 cm. long.

Cajamarca, ex Kränzlin, fide Schlechter, Fedde Repert. Beih. 9: 145. 1921. Colombia (type).

Epidendrum bambusaceum Schltr. Fedde Repert. Beih. 9: 80. 1921; Mansf. Fedde Repert. Beih. 57: t. 116, nr. 456. 1929.

Plant tall, epiphytic, from a short ascending rhizome, up to 90 cm. high. Stem simple, subterete, concealed by sheaths in the lower half, rather laxly several-leaved above. Leaves erect-spreading, narrowly linear, narrowed above, subobtuse, 18–27 cm. long, 7–9 mm. wide. Racemes terminal, arcuate-decurved, laxly few-flowered, much shorter than the upper leaves, with the slender peduncle up to 5 cm. long. Floral bracts deltoid, much shorter than the pedicellate ovary. Flowers medium-sized. Dorsal sepal oblong-elliptic, irregularly marginate at the broadly obtuse apex, about 1.2 cm. long. Lateral sepals obliquely ovate-elliptic, obtusely apiculate, very obliquely adnate to the column. Petals obliquely elliptic, subobtuse, slightly shorter than the sepals. Lip adnate to the column up to its apex; lamina subquadrate in outline, deeply 3-lobed, cordate at the base, about 6 mm. long and 14 mm. wide across the lateral lobes; lateral lobes obliquely dolabriform, truncate in front, crenulate on the sides; mid-lobe very broadly rhombic-reniform, a little narrower than the basal portion, retuse and bluntly apiculate; disc with a pair of short, semirhombic, emarginate calli at the base. Column short, stout, dilated above, auricled on each side, about 8.5 mm. long.

Loreto: Moyobamba, *Filomeno s.n.*

No specimens of this species were available.

Epidendrum bambusiforme Kränzl. Engler Bot. Jahrb. 54, Beibl. 117: 27. 1916.

Plant robust, up to 2.5 meters high. Stem stout, strict, simple, leafy, up to 1.3 cm. in diameter, entirely concealed by tubular leaf-sheaths. Leaves numerous, distichous, linear-lanceolate, very long-acuminate, up to 26.1 cm. long and 2.3 cm. wide near the base, erect-spreading, rigid. Racemes several, lateral, short, up to 9 cm. long, densely several- to many-flowered down to the base, nodding. Floral bracts short, narrowly lanceolate, acuminate, much shorter than the pedicellate ovary. Flowers fleshy or cartilaginous, rather small, brown or greenish brown, the lip white spotted with brown. Dorsal sepal oblong-obovate, obtuse, up to 13 mm. long. Lateral sepals obliquely elliptic-obovate, subobtuse, slightly shorter than the dorsal sepal. Petals spatulate or cuneate-oblanceolate, gradually narrowed to a slender base, acute or obtuse, slightly oblique, distinctly shorter than the sepals. Lip adnate to the column up to its apex, deeply 3-lobed, deeply cordate at the base, suborbicular in outline, up to 9 mm. in greatest length and slightly broader near the base; lateral lobes broadly dolabriform, irregularly erose-crenulate (or "incised") on the outer side; mid-lobe transverse, similar to the lateral lobes, retuse and bluntly apiculate in the sinus, broadly cuneate at the base; disc with a pair of complanate-subglobose calli at the base and 3 short thickened lines in front of them. Column short, stout, dilated above, auriculate on each side at the apex, up to 6 mm. long at the back.

Cuzco: Prov. of Urubamba, "Huiñaihuaina," in forest, 2550 meters, *Vargas 4115*.—Junín: Prov. of Huancayo, Valley of the Pariahuanca, between Panti and Rocchac, 2500 meters, in sclerophyllous vegetation consisting of shrubs and trees, *Weberbauer 6545* [*6535?*] (type).

Epidendrum biflorum Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 247. 1798.

Junín: Prov. of Tarma, on rocky hills, *Pavón s.n.*

This is an obscure species.

Since the completion of this enumeration, it has been pointed out by Mr. A. D. Hawkes, in Orquidea 18: 172. 1956, that this name is a homonym and he proposes for it the new name, *E. peruvianum.*

Epidendrum birostratum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 83, t. 13. 1943. Figure 77.

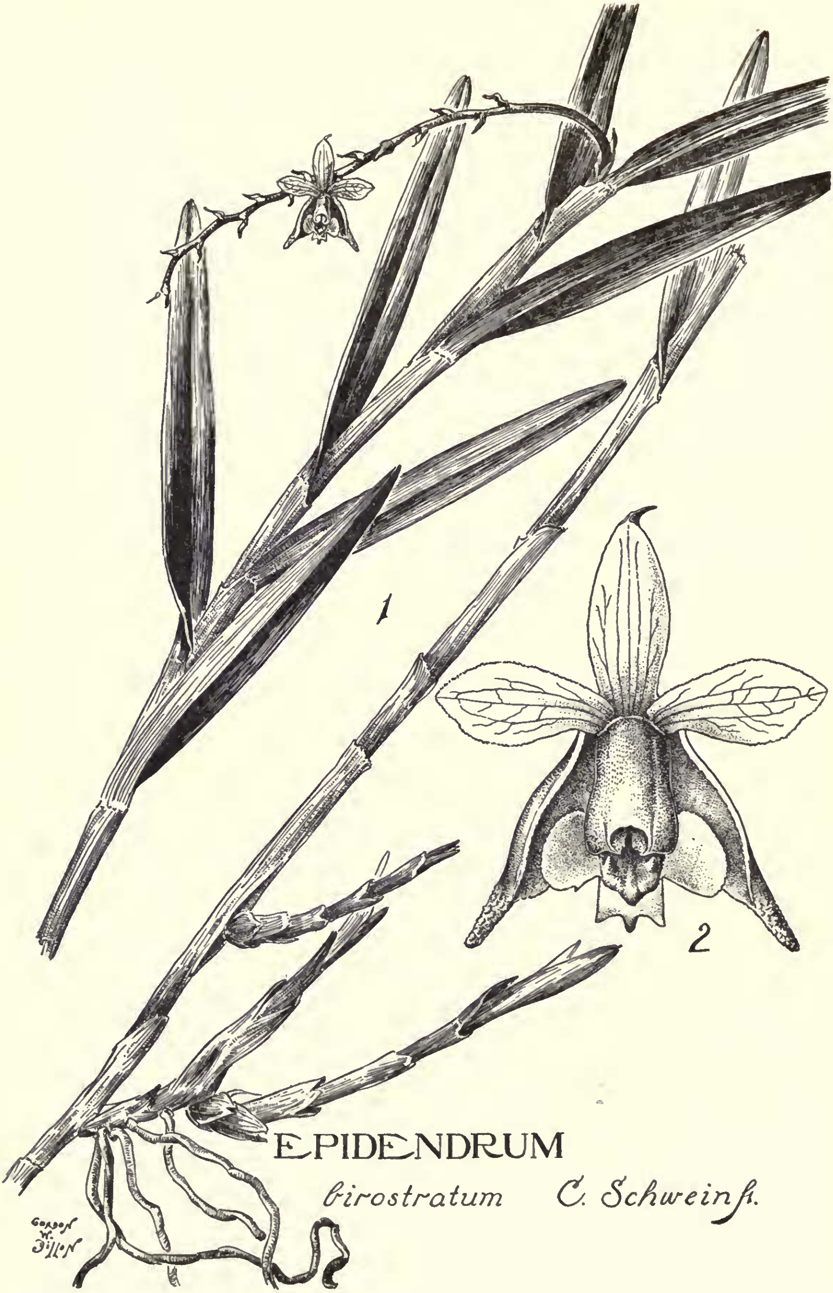
Plant epiphytic, up to 1 meter high. Stem rigid, below often with a few short branches, altogether concealed by close, tubular, imbricating sheaths which are leaf-bearing above. Leaves distichous, numerous, ascending, oblong or linear-oblong, subacute or obtuse, clasping at the base, up to 15.3 cm. long and 1.5 cm. wide. Inflorescence terminal, solitary, racemose, pendent, rather loosely several- (up to 14-) flowered, up to 14.5 cm. long. Floral bracts small, deltoid, acuminate. Flowers rather small, fleshy, with widely spreading segments, green and pink. Dorsal sepal elliptic-oblong, acute and mucronate, up to 12.5 mm. long. Lateral sepals distinctly longer, ovate-lanceolate, concave, long-rostrate, up to 18 mm. long. Petals obovate-elliptic to spatulate-cuneate, subacute to obtuse, a little shorter and either broader or narrower than the dorsal sepal. Lip adnate to the column up to its apex; lamina deeply 3-lobed, cordate at the base, about 17.8 mm. in greatest length and somewhat broader; lateral lobes obliquely rounded-dolabriform; mid-lobe porrect, about as large as the lateral lobes, cuneate-subquadrate, slightly broader at the truncate apex, sinuately tridentate; disc in the center with a large, fleshy, subquadrate-ovate, depressed callus. Column very short and broad, adnate to the center of the lateral sepals up to about its middle, terminating on each side in an oblique, transverse auricle, about 7.7 mm. long in the middle.

Apurimac: Prov. of Abancay, Ampay, epiphyte at 3200–3600 meters, *Vargas 8394.*—Cuzco: Prov. of Urubamba, Puyupata-Tuncapata, 3200 meters, epiphytic in wet forest, *Vargas 2927* (type). Near Wenner Gren ruins, 3400–3600 meters, in very wet dense forest, *Metcalf 30765.* Prov. of Paucartambo, Pillahuata (slopes), epiphyte at 2980 meters, *Vargas 6108.* (This collection lacks any perfect flowers.)

Epidendrum blepharichilum Kränzl. Engler Bot. Jahrb. 54, Beibl. 117: 26. 1916.

Plant slender, grass-like, up to over 60 cm. tall. Stems slender, branching near the rooting base with ascending branches, entirely concealed by close, evanescent sheaths which are leaf-bearing above, terete near the base, compressed above, the longest branches up to 39.3 cm. long. Leaves distichous, linear, more or less narrowed above with an acute or acuminate apex, strongly ascending, loose, up to 17 cm. long and 7 mm. wide. Inflorescence commonly paniculate with 2 or 3 strict branches, up to 17 cm. long, rather loosely few- to many-flowered; peduncle bearing a slender, elongate, appressed spathe. Floral bracts minute, setaceous, many times shorter than the pedicellate ovary. Flowers small, pale green. Dorsal sepal lanceolate-elliptic or elliptic-oblong, acute or acuminate with a complicate apex, up to 7.9 mm. long. Lateral sepals obliquely elliptic-lanceolate, sharply acute or acuminate, with a dorsal subapical keel, slightly larger than the dorsal sepal. Petals obliquely oblanceolate-linear, acute, shorter than the sepals. Lip adnate to the column up to its apex; lamina simple or subsimple, cordate-ovate, irregularly lacerate-dentate throughout, up to 6.4 mm. in greatest length and 5 mm. wide near the base; disc with a pair of flattened, fleshy calli at the base surrounding a central fleshy ridge extending to the apex where it forms a blunt apicule. Column strongly dilated above, arcuate, up to 4.5 mm. long at the back.

Junín: Prov. of Jauja, right lateral valley of the Río da Comas, north of Coma, 2600–2700 meters, in a copse in a watercourse, *Weberbauer 6612* (type).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EPIDENDRUM
birostratum C. Schweinf.
Gordon W. Dillon

FIG. 77. *Epidendrum birostratum* C. Schweinf. 1, plant; × ½. 2, flower from above, expanded; × 2.

Epidendrum blepharichilum Kränzl. var. **majus** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 85. 1943.

Plant differs from the species in its relatively robust habit, broader leaves and nearly twice larger flowers.

Stems loosely branching, entirely concealed by tubular sheaths which are scarious and leafless below but green and leaf-bearing above, relatively stout. Leaves lanceolate-linear, narrowed to an acute point, up to 14 cm. long and 14 mm. wide. Inflorescence loosely paniculate, the 3 strict branches issuing from elongate-infundibuliform spathes that are produced into linear, foliaceous blades. Flowers rather fleshy. Dorsal sepal oblanceolate-elliptic, sharply acute, about 14 mm. long. Lateral sepals obliquely elliptic-lanceolate, somewhat larger than the dorsal sepal. Petals oblanceolate-linear, acute, a little shorter than the dorsal sepal. Lip adnate to the column nearly up to its apex; lamina replicate in natural position, deeply cordate at the base, suborbicular in outline, retuse at the tip with a fleshy, recurved apicule, irregularly fringed throughout, about 13 mm. in greatest length and almost as broad, slightly constricted on each side above; disc bicallose at the base, with a central longitudinal, thickened portion. Column strongly dilated above, about 10 mm. long.

Apurimac: Prov. of Abancay, Ampuy, 3200 meters, epiphytic on *Podocarpus*, "sepals and . . . petals reddish olivaceous, greener at tips; the fringed lip light lavender rose," *Stork, Horton & Vargas 10611* (type).—Huánuco: Cani, 7 miles northeast of Mito, about 2600 meters, *Macbride 3461*. (This collection is intermediate between this variety and the species, but it more nearly approaches the variety.)

Epidendrum brachyglossum Lindl. Bot. Reg. 30, Misc. 83, no. 6. 1844; Fol. Orch. Epidendrum 45, no. 140. 1853.

Plant medium-sized with an ascending rhizome, about 30 cm. or more high. Stems solitary or in erect pairs, entirely concealed by sheaths, loosely 2- to 4-leaved above the middle. Leaves oblong to linear-oblong, abruptly obtuse to rounded at the apex, clasping at the base, up to 12 cm. long and 2 cm. wide. Inflorescence terminal, suberect, to arcuate above, much exceeding the leaves, 15–22 cm. long; peduncle mostly concealed by a conspicuous, more or less narrow, conduplicate spathe; raceme loosely many-flowered. Floral bracts minute. Flowers small, fleshy. Dorsal sepal elliptic-oblong or obovate-oblong, concave, acute, about 7 mm. long. Lateral sepals similar, oblique. Petals linear to cuneate-oblanceolate, subacute. Lip adnate to the column up to its apex; lamina very small, about 3 mm. long, 3-lobed at the base, with minute, erect, auriculiform lateral lobes and a much larger ovate, acute mid-lobe; disc between the lateral lobes with a large 3-lobed fleshy callus. Column abbreviated, stout, slightly dilated upward, about 4 mm. long at the back.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 146. 1921. Also Ecuador (type), Colombia and Bolivia.

Epidendrum brevicaule Schltr. Fedde Repert. Beih. 9: 81. 1921; Mansf. Fedde Repert. Beih. 57: t. 117, nr. 458. 1929.

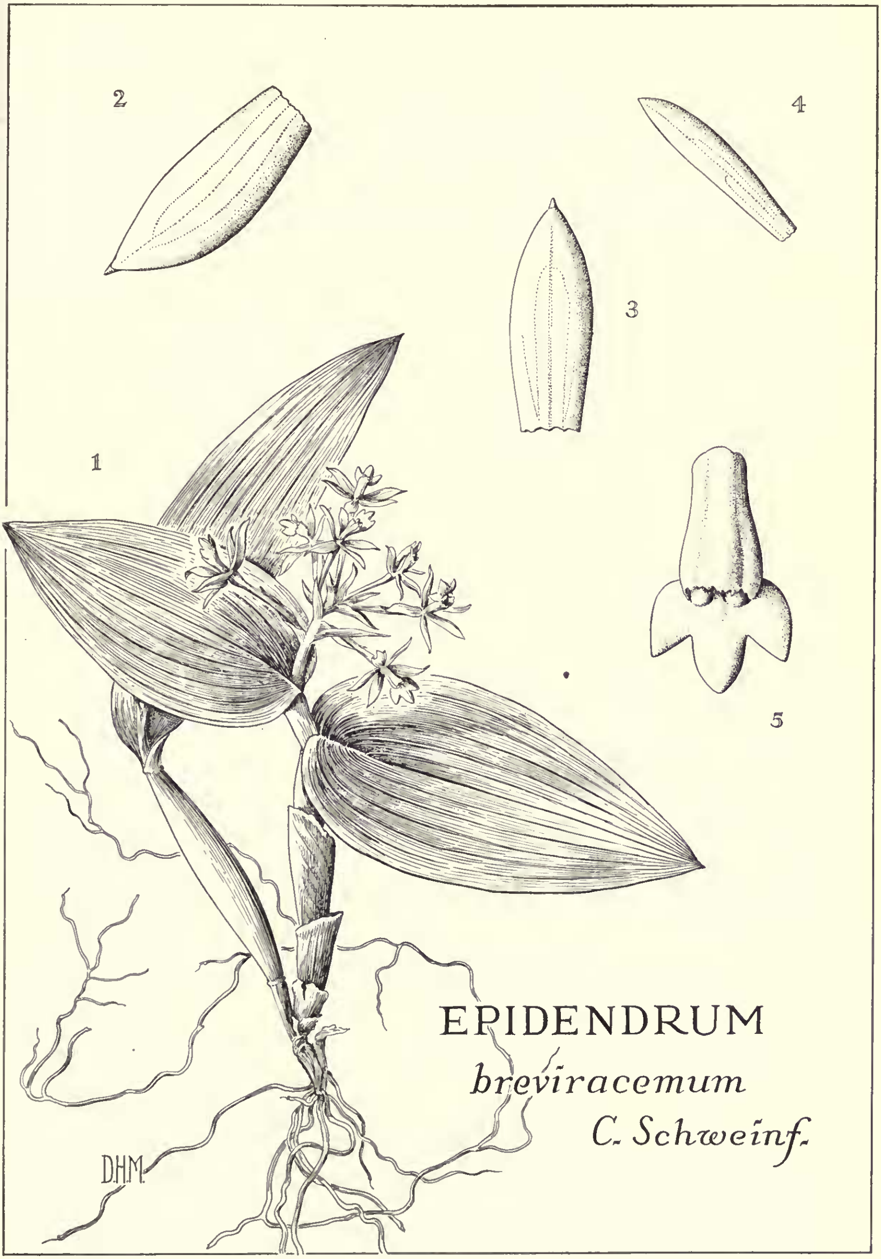
Plant low, epiphytic, with a divaricately branching rhizome. Stems short, erect, 3–4.5 cm. high, 5–8 cm. distant, densely 5- to 6-leafed, entirely concealed by the closely clasping leaf-sheaths. Leaves oblong or elliptic-oblong, obtuse, fleshy, up to 3.5 cm. long and 10 mm. wide in the middle, more or less spreading. Inflorescence terminal, 1-flowered, subsessile, about 1 cm. long, subtended by a compressed, obtuse spathe. Flower medium-sized, broadly campanulate, fleshy, yellowish brown. Dorsal sepal "oblong" or ovate-oblong, acute, somewhat concave, about 1.3 cm. long. Lateral sepals equally long, obliquely ovate-elliptic or "oblong." Petals obliquely elliptic-lanceolate or "lanceolate," acute, about as long as the sepals. Lip adnate to the column up to its apex; lamina simple, ovate, abruptly subacute, deeply cordate at the base, about 8 mm. long and 6.5 mm. wide near the base, lightly incurved or sinuate on each side, glabrous, with a pair of short compressed calli at the base. Column short, straight, dilated above, terminating in a transversely subquadrate auricle on each side, about 5 mm. long.

Junín: On cliffs below Palca, 2200–2700 meters, *Weberbauer 1787.* No sample of this orchid was available.

Epidendrum breviracemum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 139, t. 41. 1952. Figure 78.

Plant small, epiphytic, up to 10 cm. high. Rhizome apparently abbreviated, woody. Pseudobulbs approximate, cylindric to fusiform, bearing 1 or 2 leaves, about 3–5 cm. long, invested to above the middle by 2 or 3 imbricating, evanescent sheaths. Leaves ovate or elliptic-ovate to ovate-oblong, acute or subacute and apiculate, rounded to subcordate at the sessile base, about 4–8 cm. long, up to 2.7 cm. wide, green above and red to dark purple beneath, commonly horizontally spreading. Inflorescence terminal, abbreviated, recurved in the course of development, the naked peduncle with the rachis of the raceme up to 2 cm. long; raceme congested-umbelliform, about 3- to 8-flowered. Floral bracts lanceolate or ovate-lanceolate, acuminate, shorter than the pedicellate ovary. Flowers small, but large for the plant, with spreading segments. Dorsal sepal oblong-lanceolate or elliptic-lanceolate, acute, mucronate, up to 11.2 mm. long. Lateral sepals obliquely elliptic-lanceolate, acute and mucronate, with a prominent denticulate keel through the upper half, a little longer than the dorsal sepal. Petals obliquely linear or oblanceolate-linear, acute, slightly shorter than the sepals. Lip adnate to the column up to its apex; lamina 3-lobed at about the middle, suborbicular-ovate in outline, more or less deeply cordate at the base, about 4–5 mm. long in the center and 6.2 mm. wide across the lateral lobes; lateral lobes obliquely semiovate or aliform, acute to obtuse; mid-lobe ovate or elliptic-ovate and acute or (more rarely) ovate-lanceolate and acuminate, fleshy; disc with a pair of subglobose fleshy calli at the base. Column strongly dilated above in front, about 6.5 mm. long at the back.

Cuzco: Prov. of Urubamba, "Huiñaihuaina," Inca ruins, 2550 meters, epiphyte in forest, flowers pinkish white, *Vargas 4122.*—Junín: Prov. of Tarma, Agua Dulce, 2400 meters, on dwarf moss-covered trees in highland forest, flowers pale flesh-red with reddish lines and dots, *Woytkowski 39456* (type). Same locality, 2000 meters, on tree in low highland forest, sepals pale green with red lines, petals pale yellow, *Woytkowski 35490.*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EPIDENDRUM
breviracemum
C. Schweinf.
DHM

FIG. 78. *Epidendrum breviracemum* C. Schweinf. 1, plant; × 1. 2, lateral sepal; × 3. 3, dorsal sepal; × 3. 4, petal; × 3. 5, column and lip; × 3.

Epidendrum capitellatum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 86, figs., 1943. Figure 79.

Plant medium-sized, with a branching rhizome. Stems spreading, leafy, up to 19 cm. tall up to the inflorescence, mostly concealed by loose, infundibuliform leaf-sheaths. Leaves numerous, distichous, unjointed, ovate, ovate-lanceolate or oblong-ovate, acute, widely spreading, deeply clasping, up to 5.1 cm. long and 1.7 cm. wide, coriaceous. Peduncle abbreviated, provided with 1 or 2 separated, conduplicate, recurved bracts. Raceme terminal, capitate, densely many-flowered, about 1.5 cm. long and broad. Flowers small, very fleshy, rigid, subglobose, green. Dorsal sepal oblong-ovate, acute, concave, up to 8 mm. long. Lateral sepals obliquely ovate, slightly broader than the dorsal sepal, with a prominent, more or less denticulate keel without. Petals obliquely linear-oblanceolate, acute or subacute, a little shorter than the sepals and about half as broad. Lip strongly adnate to the column; lamina concave-conduplicate in natural position, ovate-reniform when forcibly expanded, deeply cordate at the base, subtrilobed toward the apex, truncate or retuse and apiculate in front, 4.5–6 mm. in greatest length and somewhat wider when expanded, bicallose at the base. Column very short and stout, truncate at the apex.

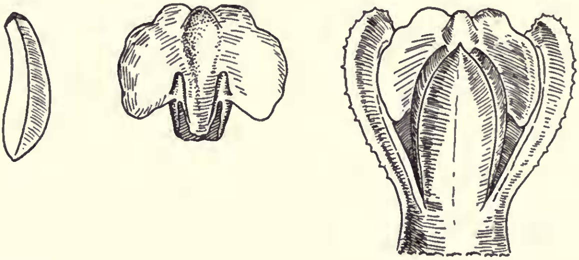


FIG. 79. *Epidendrum capitellatum* C. Schweinf. Flower from above, lip (expanded), and petal; × 3.

Huánuco: Cani, 7 miles northeast of Mito, about 2600 meters, "in clumps in trees," *Macbride 3463.*

Epidendrum capricornu Kränzl. Engler Bot. Jahrb. 54, Beibl. 117: 24. 1916.

Plant tall, 35–86 cm. high including the inflorescence. Stems "aggregated," simple, leafy, entirely concealed by tubular sheaths which are leafless and commonly marcescent through the lower portion. Leaves 6 or more, distichous, oblong-elliptic or elliptic ("oblong"), commonly 6–8 cm. long and 2.5–3 cm. wide, acute, clasping at the base, chartaceous. Peduncle conspicuous, mostly or wholly concealed by 2–4 appressed, conduplicate, tardily evanescent spathes. Inflorescence a spreading, loosely several- to many-flowered panicle, with few to several branches. Flowers medium-sized, with the slender pedicellate ovary up to 3.2 cm. long. Segments reflexed-spreading, reddish brown to cerise. Dorsal sepal narrowly oblanceolate-oblong, sharply acute, up to 1.63 cm. long, fleshy, concave. Lateral sepals very similar to the dorsal sepal but a little wider, oblique. Petals spatulate-filiform, acute, nearly as long as the sepals. Lip entirely adnate to the column; lamina deeply 3- or 4-lobed; lateral lobes aliform, strongly retrorse, round-ovate or oval when expanded, with irregular or lobulate margins, up to 8.5 mm. long and nearly 7 mm. wide near the base; mid-lobe sessile, consisting of a pair of divaricate, falcate-linear-oblong lobules which are fleshy and suberect in natural position, 5–6 mm. long, separated by a short blunt apicule; disc with a very fleshy concave callus which is approximate to the two basal calli. Column slender, dilated above, terminating on each side in a subquadrate, bidentate auricle, up to about 10.5 mm. long at the back.

Amazonas: Prov. of Bongara, 2 miles southwest of the village of Pomocochas, about 2400 meters, common epiphyte in mountain rainforest in Quebrada Chido, *Hodge 6144*.—Cajamarca: Prov. of Jaën, above Tabaconas, on the eastern slope of the Cordillera (5° 10′–5° 20′ S. Br.), 2400–2500 meters, in sclerophyllous vegetation consisting of shrubs and scattering trees, *Weberbauer 6296* (type).

Epidendrum carnosiflorum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 87, t. 6, figs. 1–6. 1943. Figure 80.

Plant epiphytic, medium-sized, branching. Stems irregularly branched, often very short, entirely enveloped by imbricating, tubular-cylindric sheaths which are leaf-bearing except near the base of the stems or branches. Leaves distichous, oblong-linear, acute or obtuse and apiculate, clasping at the base, up to 6 cm. long and 8 mm. wide, thickly coriaceous. Inflorescences racemose, terminal, commonly arcuate or nodding, 9.5 cm. or less long, loosely several- (up to 10-) flowered almost to the base. Floral bracts conspicuous, horizontally spreading, concave-conduplicate. Flowers fleshy, medium-sized. Dorsal sepal lanceolate, short-acuminate, about 10 mm. long. Lateral sepals obliquely lanceolate or ovate-lanceolate, long-acuminate, a little longer and distinctly broader than the dorsal sepal. Petals linear, obtuse, lightly sigmoid, about 8.7 mm. long, abruptly reflexed at the base. Lip adnate to the column nearly up to its apex; lamina tubular-involute, distinctly 3-lobed below the middle, shallowly cordate at the truncate base, about 8.2 mm. long; lateral lobes erect and embracing the column, small, semiobovate; mid-lobe much larger, narrowly triangular, acuminate, very fleshy. Column very short and stout, about 3.3 mm. long at the back, extended on each side into a very oblique tooth.

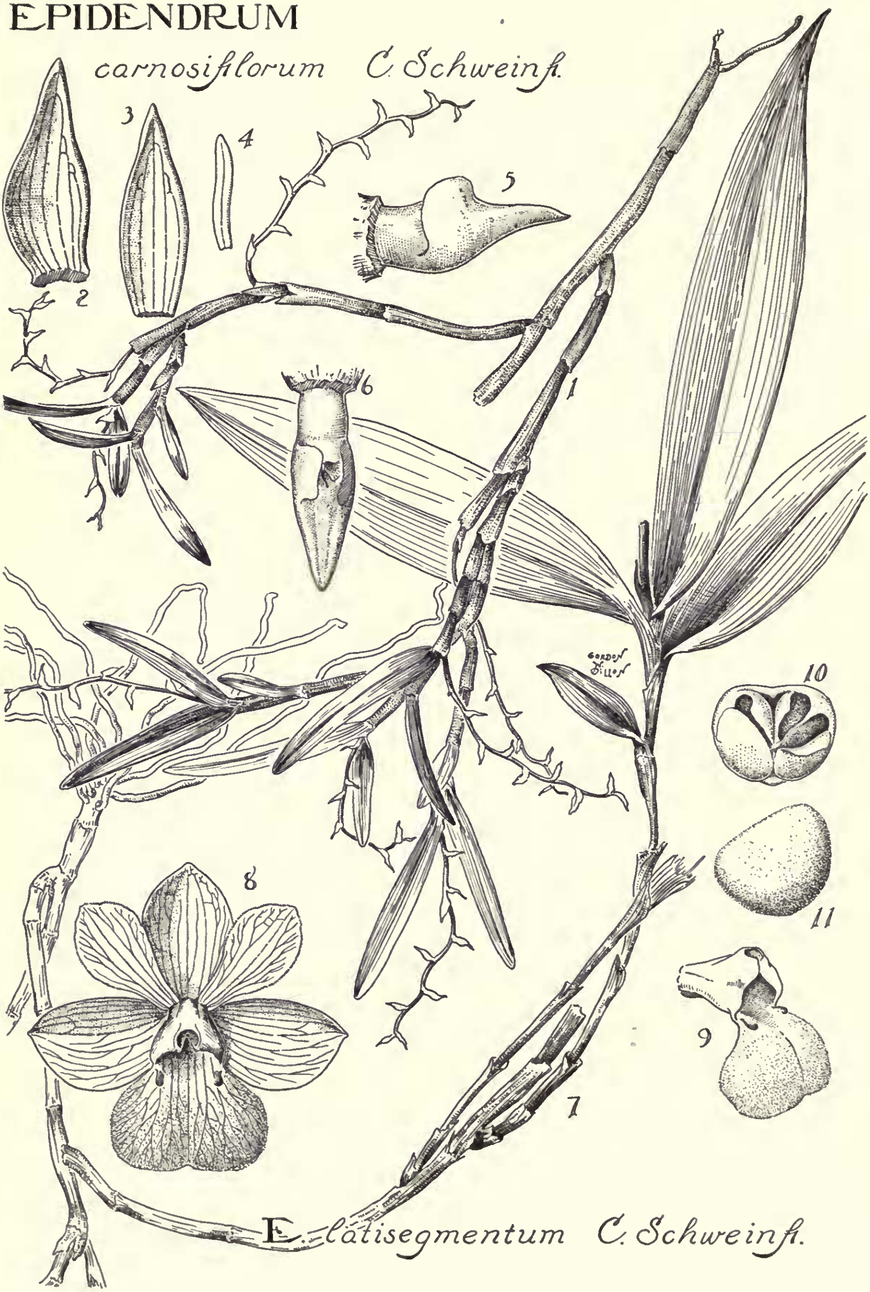
Junín: Pichis Trail, Eneñas, 1700 meters, in open sphagnum swamp, *Killip & Smith 25705*.

Epidendrum catillus Reichb. f. & Warsc. Bonpl. 2: 112. 1854. *Epidendrum vinosum* Schltr. Fedde Repert. Beih. 9: 96. 1921; Mansf. Fedde Repert. Beih. 57: t. 122, nr. 480. 1929.

Plant extremely variable both vegetatively and florally, 19 cm. to over 1 meter high (the *E. vinosum* form). Stems simple, entirely concealed by close, tubular sheaths, leafy above. Leaves distichous, oblong-lanceolate to oval, obtuse to subacute with an obscure apicule, clasping at the base, commonly fleshy-coriaceous,

EPIDENDRUM

carnosiflorum C. Schweinf.



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GORDON DILLON

E. *latisegmentum C. Schweinf.*

up to 7.5 cm. long and 3.6 cm. wide, spreading. Inflorescence simple or branched above, the peduncle being commonly elongate and entirely concealed by close, tubular, scarious sheaths. Raceme (or branches of the panicle) short, laxly or densely few- to many- (26-) flowered. Pedicellate ovary slender, up to 5 cm. long. Flowers medium-sized, red-violet or violet and white, with spreading segments. Dorsal sepal oblanceolate-oblong, subobtuse to acute, about 1.5 cm. long. Lateral sepals similar, oblique. Petals oblanceolate or narrowly cuneate, acute or obtuse, oblique, a little shorter and narrower than the sepals. Lip adnate to the column up to its apex; lamina small, sharply 3-lobed, triangular-ovate in outline, deeply cordate at the base, about 5–6 mm. long in the center and 7–7.5 mm. wide across the lateral lobes; lateral lobes obliquely semiovate to rounded-dolabriform, coarsely toothed or incised on the outer margin; mid-lobe porrect, broadly obovate to ovate-lanceolate or oblong-lanceolate to oblong, apiculate to abruptly acute; disc with a plurisulcate, excavated, apically crenulate callus (more or less apiculate in the middle) extending to the middle of the mid-lobe or beyond the middle, and with a pair of fleshy calli at the base. Column long, gently dilated above, about 10 mm. long, with a pair of bidentate auricles above.

Loreto: Near Moyobamba, 1000 meters, in savanna woods, *Weberbauer 4642* (type of *E. vinosum*).—San Martín: Tarapoto, 750 meters, *Williams 5981* (narrow-leaved form). Zepelacio, near Moyobamba, 1200–1600 meters, epiphyte in mountain forest, *Klug 0.20* (in part). San Roque, 1350–1500 meters, *Williams 7661*. Also Colombia (type of *E. catillus*) and Ecuador.

The following two collections differ from typical *E. catillus* in having relatively longer, oblong-lanceolate leaves of thinner texture (up to 11.4 cm. long and 2.4 cm. wide), and in having an asymmetrically developed mid-lobe of the lip. It appears, therefore, that they represent either mutations or hybrids between *E. catillus* and some other species.

San Martín: Tarapoto, 750 meters, *Williams 5952*. Zepelacio, near Moyobamba, 1200–1600 meters, epiphyte in mountain forest, *Klug 0.20* (in part).

Epidendrum ciliare L. Syst. Nat. ed. 10: 1246. 1759; Cogn. Martius Fl. Bras. 3, pt. 5: 70. 1898. Figure 81.

Plant very variable, medium-sized to large, usually on trees or rocks. Pseudobulbs or thickened stems more or less approximate on a creeping rhizome (often the specimens show but one pseudobulb), cylindric or more or less clavate, up to

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FIG. 80. *Epidendrum carnosiflorum* C. Schweinf. 1, plant; × ½. 2, lateral sepal; × 2½. 3, dorsal sepal; × 2½. 4, petal; × 2½. 5, lip and column from side, natural position; × 2½. 6, lip and column from above, natural position; × 2½. *E. latisegmentum* C. Schweinf. 7, plant; × ½. 8, flower, expanded; × 1. 9, lip and column from side; × 1. 10, anther, showing cells; × 5. 11, pollinium; × 10.

22.5 cm. high, entirely enveloped by loose, distichous, imbricating, scarious sheaths, usually bearing 2 (rarely 1 or 3) subopposite leaves at the summit. Leaves commonly oblong-elliptic (more rarely oblong or elliptic to oval), obtuse to rounded at the apex, cuneate at the sessile base, up to 28 cm. long and 8 cm. wide (sometimes appearing conduplicate in the dried specimen). Inflorescence simple, erect, up to 47 cm. high, with few to several distichous, often imbricating spathes below, loosely few- to several-flowered above. Floral bracts large, spreading, spathaceous, up to 7 cm. long. Pedicellate ovary equaling or much exceeding the subtending bract. Flowers large, with wide-spreading segments, greenish to white or usually pale yellow with a white lip. Sepals linear-lanceolate, long-acuminate, 3.5–8.5 cm. long, up to 8 mm. wide. Petals a little shorter, but more or less narrower than the sepals (rarely markedly broader). Lip adnate to the column up to its apex, somewhat shorter than the sepals; lamina very deeply 3-lobed, about 3–5 cm. long; lateral lobes semiovate or aliform, deeply long-ciliate on the outer margin; mid-lobe filiform-subulate, much exceeding the lateral lobes; disc shortly bialate below. Column slender below, abruptly dilated above, with a lacerate clinandrium.

Huánuco: Prov. of Huánuco, Cayumba, between Huánuco and Tingo María, 700–800 meters, in forest, *Ferreyra 1868*. A widespread species extending from Mexico through Central America and the West Indies (type) to Colombia, Venezuela, the Guianas and Brazil.

Epidendrum cinnabarinum Salzm. ex Lindl. Gen. & Sp. Orch. 106. 1831; Lindl. Bot. Reg. 28: t. 25. 1842; Cogn. Martius Fl. Bras. 3, pt. 5: 119. 1898.

Plant tall, stout, up to 9 dm. high. Stem simple, leafy, entirely concealed (except at the base) by tubular sheaths. Leaves laxly distichous, oblong to oblong-elliptic, up to 11 cm. long and 3.5 cm. wide, obtuse to rounded above, clasping below, thickly coriaceous, more or less shining above. Peduncle terminal, much surpassing the leaves, simple or rarely branched, concealed by close, scarious, tubular sheaths. Floral bracts relatively small, narrow. Racemes short, commonly dense, several- to many-flowered, the rachis up to 6.5 cm. long. Flowers medium-sized, long-pedicelled, bright scarlet, with spreading segments. Dorsal sepal oblanceolate-oblong, acute or obtuse, 18–20 mm. long. Lateral sepals similar, very oblique, a little longer, up to 24 mm. long. Petals elliptic-lanceolate or elliptic-oblanceolate, oblique, obtuse, about as long as the lateral sepals. Lip adnate to the column up to its apex; lamina deeply 3-lobed, up to 13 mm. long and 18 mm. wide across the base; lateral lobes obliquely dolabriform with a deeply lacerate outer margin; mid-lobe much smaller, triangular-lanceolate below, then more or less abruptly dilated near the front into a shortly cuneate, truncate, bi- or trifurcate apex; disc bicallose at the base, with a median keel extending nearly to the apex. Column long, slender, slightly dilated above, about 13 mm. long.

Amazonas, fide Schlechter, Fedde Repert. Beih. 9: 146. 1921. Brazil (type).

Epidendrum cochlidium Lindl. Ann. Nat. Hist. 4: 382. 1840; Fol. Orch. Epidendrum 72, no. 228. 1853. *Epidendrum pulcherrimum*

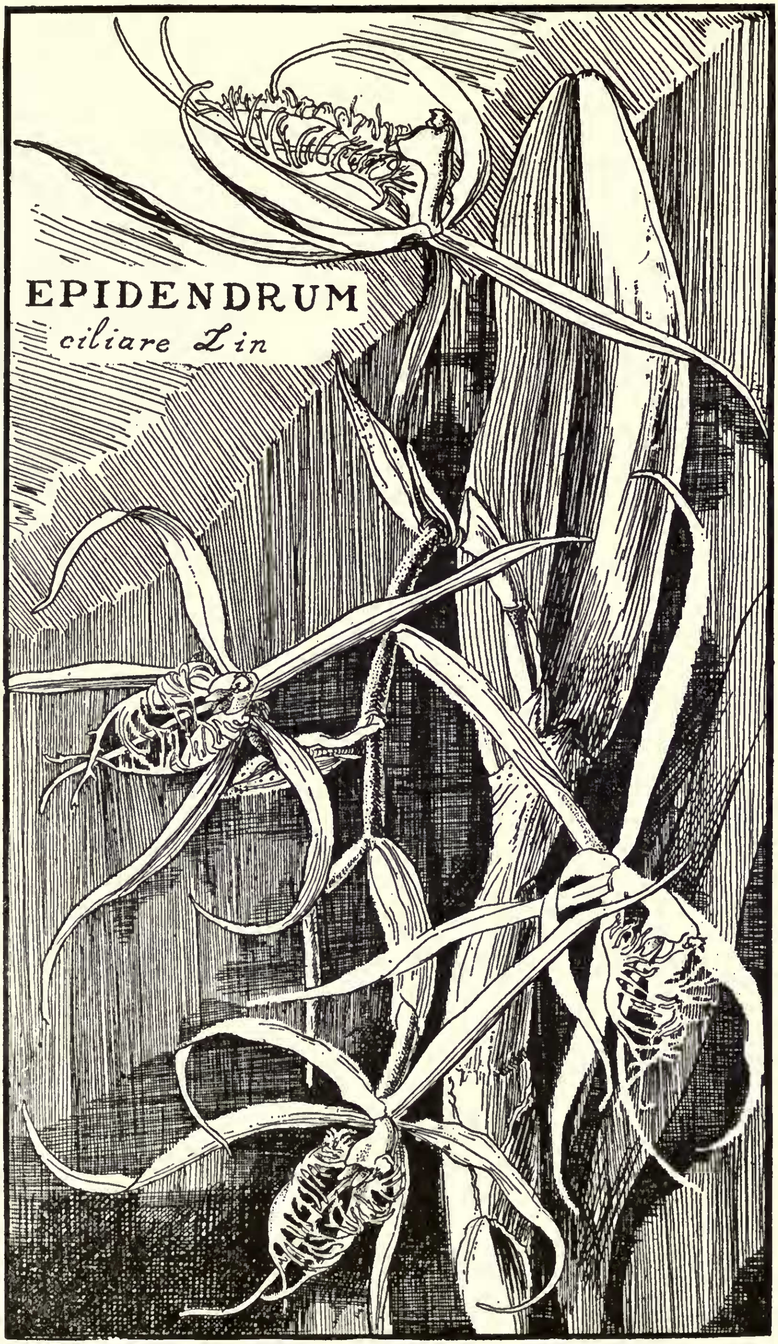
EPIDENDRUM
ciliare Lin

FIG. 81. *Epidendrum ciliare* L. Plant; × 1. Drawn by Blanche Ames.

Kl. Allg. Gartenz. 22: 233. 1854, fide Schlechter, Fedde Repert. Beih. 9: 146. 1921.

Plant tall, epiphytic or terrestrial, more or less stout, up to over 12 dm. tall. Stems entirely concealed by close, tubular sheaths which are scarious and leafless below and leafy above. Leaves numerous, distichous, oval to elliptic-oblong (rarely oblong-ovate or oblong-lanceolate), obtuse or rounded to subacute, clasping below, up to 12 cm. long and 2.5 cm. wide (the upper and lower blades much smaller), more or less coriaceous. Inflorescence terminal, much surpassing the leaves; peduncle up to 58 cm. long, rarely branching above, clothed with close, tubular, scarious sheaths; raceme short, erect to arcuate or nodding, densely or subdensely many-flowered, up to 8.5 cm. long. Floral bracts inconspicuous, lanceolate-attenuate, much shorter than the pedicellate ovary. Flowers long-pedicelled, either red, yellow or light pink with white or cream-colored lip, the segments spreading. Dorsal sepal lanceolate-oblong or elliptic-oblong, up to 17 mm. long, acute or subacute. Lateral sepals similar, obliquely lanceolate-oblong or semielliptic, acute, as long as the dorsal sepal but slightly broader. Petals variable, oblanceolate-elliptic or elliptic-oblong, acute, slightly smaller than the sepals. Lip adnate to the column up to its apex; lamina deeply 3-lobed, up to about 9 mm. long and wide; lateral lobes obliquely dolabriform or semiorbicular with a rounded base, dentate or incised-dentate (especially toward the front); mid-lobe subequal or distinctly larger, broadly obovate or flabellate from a cuneate base, rounded to truncate and acute or gently retuse and apiculate in front, with the margins (except near the base) sharply dentate; disc mostly occupied by a large, concave, 3-lobed callus, of which the middle lobe is much the largest. Column short, stout, slightly dilated upward, up to about 10 mm. long, terminating on each side in a dentate auricle.

Peru: Habitat not recorded, *Mathews 2835* (type).—Huánuco: Prov. of Huánuco, Carpish, 2850 meters, epiphyte, *Asplund 13135.* —Junín: La Merced, Hacienda Schunke, about 1200 meters, epiphyte, *Macbride 5779.* Pichis Trail, Eneñas, 1700 meters, terrestrial in open sphagnum swamp, *Killip & Smith 25674* (florally very atypical). Pichis Trail, Porvenir, 1500–1900 meters, terrestrial in dense forest, *Killip & Smith 25898.* Also Venezuela.

Epidendrum cordatum Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 244. 1798.

Huánuco: Chinchao, on wooded mountains and in clearings, on trees and rocks, *Pavón s.n.*

This is an obscure entity.

Epidendrum coriifolium Lindl. Journ. Hort. Soc. London 6: 218 & text cut. 1851; Fol. Orch. Epidendrum 77, no. 240. 1853; Summerhayes, Bot. Mag. 160, t. 9477. 1937.

Plant extremely variable, very stout, erect, epiphytic or terrestrial, 15–60 cm. high. Stems approximate to subremote on a more or less prominent creeping rhias, lineal lanceoladas. Flores amarillas que cambian a anaranjado."

PAEPALANTHUS DICHOTOMUS var. BRASILIENSIS Moldenke, var. nov.

Haec varietas a forma typica speciei foliis 3—5 mm. longis 1 mm. latis glabris nitidisque ad apicem acutissimis et pedunculis abbreviatis 4--10 mm. longis recedit.

This variety differs from the typical form of the species in having its rosulate leaves only 3—5 mm. long and 1 mm. wide, thick in texture, stiffly erect, glabrous and shiny, very acute at the apex, and the peduncles much abbreviated, only 4--10 mm. long.

The type of the variety was collected by Gert Hatschbach (no. 27425) along the road near Salto da Divisa, in the municipality of Diamantina, Minas Gerais, Brazil, at 1300 meters altitude, on September 7, 1971, and is deposited in my personal herbarium at Plainfield, New Jersey.

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ADDITIONAL NOTES ON THE GENUS VERBENA. X

Harold N. Moldenke

VERBENA [Dorst.] L.

Additional & emended bibliography: Gattinger, Med. Pl. Tenn. 63—64. 1894; Reiche & Phil., Fl. Chil. 5: 271—298, 300, 302, 304, & 463. 1910; Graves, Eames, Bissell, Andrews, Harger, & Weatherby, Bull. Conn. Geol. & Nat. Hist. Surv. 14: [Cat. Flow. Pl.] 330--332. 1910; Harger, Bull. Conn. Geol. & Nat. Hist. Surv. 48: 74. 1930; Gathercoal, Checklist Nat. & Introd. Drug Pl. [22]. 1942; Beston, Herbs & Earth 60—62, 131, & 133. 1950; Goossens, Suid-Afrik. Blom. Pl. 185. 1953; Fogg, Weeds Lawn & Gard. 141. 1956; Haramaki, Weed Abstr. 14: 256. 1965; Ferrándiz, Guia Med. Veg. 388-389. 1967; Tawada, Okinawa Seibutsugakki [Biol. Mag. Okinawa] 4 (6): 36. 1968; McCarthy & Morrow, Proc. 24th N. Cent. Weed Control Conf. 64. 1969; Soukup, Raymondiana 3: 26, 57, & 91. 1970; Graf, Exot. Pl. Man., ed. 1, 320, 378, 410, & 411. 1970; Bright of America, Summersville, W. Va., 25.GC.70 Petunias & Verbenas. 1970; Mayall, Weed Abstr. 20: 321. 1971; Moldenke, Fifth Summ. 1: 6, 10, 14—25, 27, 30--54, 57—66, 74—78, 81, 82, 84--86, 89, 91, 92, 98, 99, 101, 104--106, 109, 111, 120, 128, 137, 138, 143, 144, 177—179, 184, 187--190, 192—194, 200--211, 213--215, 222, 231, 234, 238, 241, 246, 248, 252, 255, 257, 262, 264--267, 269—271, 278, 279, 281, 284, 290, 292, 294, 298, 303, 306, 308, 311--313, 318, 328, 337, 341, 343, 344, 349--353, 369--373, 375, 376, 389--391, 396, 397, 400, 402, 421, 468, 471, & 473 (1971) and 2: 491, 492, 520--523, 525—527, 531, 534, 548, 558, 559, 568, 569, 575, 593, 594, 618--621, 645, 648--710, 736, 738, 741, 742, 744, 752, 766, 767, 769, 773, 774, 776, 781--785, 787, 780, 791--794, 912--922, 967--970, & 973. 1971; Moldenke, Phytologia 22: 456--501. 506--508, 510, & 512. 1972.

VERBENA AMBROSIFOLIA Rydb.

Additional bibliography: Moldenke, Phytologia 22: 459--462, 471, 473, 485, & 497. 1972.

VERBENA ARAUCANA R. A. Phil.

Additional & emended bibliography: Reiche & Phil., Fl. Chil. 5: 289 & 290. 1910; Moldenke, Phytologia 22: 463 & 464. 1972.

VERBENA ARISTIGERA S. Moore

Additional bibliography: Moldenke, Phytologia 22: 463--464. 1972.

The corollas of this plant are described as "lilac" on *Krapovickas & Cristóbal 16015*.

Additional citations: ARGENTINA: Misiones: *Krapovickas & Cristóbal 16015* (Ft).

VERBENA ATACAMENSIS Reiche

Additional & emended bibliography: Reiche & Phil., Fl. Chil. 5: 289 & 291--292. 1910; Moldenke, Phytologia 22: 464. 1972.

VERBENA BERTERII (Meisn.) Schau.

Additional bibliography: Reiche & Phil., Fl. Chil. 5: 287, 289, 293, & 294. 1910; Moldenke, Phytologia 22: 466. 1972.

VERBENA BONARIENSIS L.

Additional & emended bibliography: Reiche & Phil., Fl. Chil. 5: 283 & 284. 1910; Moldenke, Phytologia 22: 474--479. 1972.

VERBENA BRASILIENSIS Vell.

Additional bibliography: Rickett, Wild Fls. U. S. 3 (2): [367], pl. 111 (1969) and 5 (2): [455], pl. 152. 1971; Moldenke, Phytologia 22: 478 & 488--490. 1972.

Additional illustrations: Rickett, Wild Fls. U. S. 3 (2): [367], pl. 111 (in color) [as *V. litoralis*] (1969) and 5 (2): [455], pl. 152 (in color) [as *V. litoralis*]. 1971.

Rickett (1969, 1971), in the color illustration which he uses twice, purports to depict *V. bonariensis* L. and *V. litoralis* H.B.K. -- the front plant in the photograph is obviously *V. bonariensis*, but the rear plant is certainly not *V. litoralis*! A far more likely identification for it is *V. brasiliensis*.

VERBENA CABRERAE Moldenke

Additional synonymy: *Glandularia cabrerae* (Mold.) Tronc., in herb.

Additional bibliography: Moldenke, Phytologia 22: 490. 1972.

Krapovickas and his associates found this plant growing on "barrancas de arroyo" and describe the corollas as "violet".

Additional citations: BOLIVIA: Tarija: *Krapovickas*, *Mroginski*, *& Fernández 19272* (Ft).

VERBENA CANADENSIS (L.) Britton

Additional & emended bivliography: Graves, Eames, Bissell, Andrews, Harger, & Weatherby, Bull. Conn. Geol. & Nat. Hist. Surv. 14: [Cat. Flow. Pl.] 331--332. 1910; Winge, Proc. Linn. Soc. Lond. 150: 236. 1938; Moldenke, Phytologia 22: 492--498. 1972.

VERBENA CAROLINA L.

Additional synonymy: *Verbena caroliniana* Anderss. apud B. L. Robinson, Proc. Am. Acad. 38: 197, in syn. 1902.

Additional & emended bibliography: Crantz, Inst. Rei Herb. 1: 573. 1766; [Retz.], Nom. Bot. 11. 1772; J. F. Gmel. in L., Syst. Nat., ed. 13, pr. 1, 2: 42 (1789) and ed. 13, pr. 2, 2: 42. 1796; Pers., Sp. Pl. 3: 347. 1819; Hook., Trans. Linn. Soc. Lond. Bot. 20: 195. 1847; A. Wood, Class-book, [ed. 42], pr. 1, 537 (1861), [ed. 42], pr. 2, 537 (1863), [ed. 42], pr. 3, 537 (1865), [ed. 42], pr. 4, 537 (1867), [ed. 42], pr. 5, 537 (1868), [ed. 42], pr. 6, 537 (1869), and [ed. 42], pr. 7, 537. 1870; A. Wood, Am. Bot. & Flor., ed. 1, pr. 1, 236 (1870), ed. 1, pr. 2, 236 (1871), and ed. 1, pr. 3, 236. 1872; A. Wood, Class-book, [ed. 42], pr. 8, 537. 1872; A. Wood, Am. Bot. & Flor., ed. 1, pr. 4, 236 (1873), ed. 1, pr. 5, 236 (1874), and ed. 1, pr. 6, 236. 1875; A. Wood, Class-book, [ed. 42], pr. 9, 537 (1876) and [ed. 42], pr. 10, 537. 1881; O. R. Willis in A. Wood, Am. Bot. & Flor., ed. 2, 236. 1889; Solered., Syst. Anat. Dicot. 713. 1899; B. L. Robinson, Proc. Am. Acad. 38: 196--197. 1902; D. H. Scott in Solered., Syst. Anat. Dicot., transl. Boodle & Fritsch, 1: 631. 1908; Lowe, Miss. State Geol. Surv. Bull. 17: 236. 1921; Savage, Cat. Linn. Herb. Lond. 4. 1945; Howell & McClintock in Kearney & Peebles, Ariz. Fl., ed. 2, 726 & 727. 1960; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 615, 618, & 624. 1960; Hocking, Excerpt. Bot. A.6: 91 (1963) and A.7: 206 & 455. 1964; Rzedowski & McVaugh, Contrib. Univ. Mich. Herb. 9: 65 & 107. 1966; W. C. Grimm, Recog. Flow. Wild Pl. 228 & 229. 1968; Moldenke, Biol. Abstr. 49: 3252. 1968; Moldenke, Phytologia 16: 186 & 340--341. 1968; Moldenke, Résumé Suppl. 16: 2 & 28. 1968; Hocking, Excerpt. Bot. A.13: 570 & 571 (1968) and A. 14: 206. 1969; Moldenke, Biol. Abstr. 50: 418. 1969; D'Arcy, Taxon 19: 556. 1970; Gibson, Fieldiana Bot. 24 (9): 230--232, fig. 46. 1970; Wiggins & Porter, Fl. Galáp. Isls. 997. 1971; Moldenke in Wiggins & Porter, Fl. Galáp. Isls. 508. 1971; Moldenke, Fifth Summ. 1: 51, 63, 75, 81, 84, 85, & 370 (1971) and 2: 654, 660, 661, 673, 684, 690, 701, 706, 709, 787, 793, 913, & 973. 1971; Moldenke, Phytologia 22: 501--502. 1972.

Additional illustrations: Gibson, Fieldiana Bot. 24 (9): 231, fig. 46. 1970.

Recent collectors have found this plant growing along streams, along paths in open disturbed secondgrowth thickets, and along dry open or dry grassy roadsides, on railroad embankments and grassy valley floors, in matorral, deciduous tropical woods, dense forests, small barrancas, maize fields, disturbed oak woods, pinewoods, pine-fir woods, and pine-oak woods, often in rocky soil. It has been collected in fruit in March (in addition to the months previously reported). Additional common names reported for it are "chichavac" and "dorí". Pennington reports that it is an excellent pasturage plant and that a medicinal tea is made from it in Sonora to cure headaches.

The corollas are described as "lilac" on Flores Crespo 293, "violet" on Franco R. s.n. [20.VIII.1967], "pale-violet" on Roe, Roe, & Mori 678, "blue" on Breedlove 14430a, Jiménez R. 151, and S. López 89, "light-blue" on Rowell 3061, "pale-blue" on Flores Crespo 45 and Breedlove & Kawahara 16887, and "purple" on Bautista s.n. [13/VIII/1967], Farías 83, Martínez-Calderón 1765, R. Runyon 884, and J. Rzedowski 1135, 1226, 20284, & 20988.

Breedlove & Kawahara found the plant growing on the wooded banks of streams with Alnus sp., Quercus spp., Padus serotina, and Pinus engelmanni. In Guanajuato McVaugh found it "on steep rocky (rhyolitic) mountainsides, weedy, not much seen", but in Tamaulipas it is reported by Runyon as "common on tops of mountains in fertile soils". Rzedowski encountered it in "charcos cercanos a la carretera", González Quintero in "ladera caliza con vegetación de Cephalocereus", and Jiménez R. on "ladera con vegetación de matorral xerófilo".

Gibson (1970) states that "This has been reported from Guatemala as V. ehrenbergiana Schauer". Macbride (1960) cites Pennell 14770 from Lima and Soukup 3182 from Junín, Peru, but these are probably misidentifications. The "Verbena Carolina L." of Lowe (1921) is Stylodon carneus (Medic.) Moldenke, as is also the "Verbena caroliniana, Carolina verbena" described by Grimm (1968).

Savage (1945) lists as the type of V. carolina sheet 17 under genus 35, Verbena, where it is identified as 'Verbena "carolin."' with the comment "[cf. Jacq. list 1761. n. 8. det. Jacq: an carolina]".

Franco R. s.n. [20.VIII.1967], García Romero s.n. [11.VIII.1968], and Márquez s.n. [23/VII/1962] are mixtures with V. menthaefolia Benth., while Pennington 215 is a mixture with V. pinetorum Moldenke.

Charles Darwin, in the beginning of October, 1835, on the famous voyage of the "Beagle", collected two specimens of vervain on James Island in the Galápagos group. One of these was identified by Hooker on the label as "Verbena polystachya H.B.K. var.?" Later (1847) he published this as "V. polystachya H.B.K. var. foliis incisis segmentis grossè serratis" and made this comment: "Sprengel unites this species with V. urticaefolia, to which our plant bears a close affinity; but the margins of the leaves in the present are far more deeply cut, and the segments again coarsely serrated. They may very possibly be mere variations of one species." Andersson (1859) misquoted Hooker's varietal description and reduced it to "V. caroliniana Linn." Robinson (1902) and Stewart (1911) adopted the name, V. carolina L., for the plant of Darwin. There is no evidence that any of these later workers actually examined Darwin's specimen, although an unknown hand changed the determination on it to "V. urticifolia L. ?" and then to "V. carolina L." Examination of the original specimen has shown that it represents neither of the suggested species, but is actually V. sedula var. darwinii Moldenke.

The Hodge 6237, distributed as V. carolina, is actually V. hayekii Moldenke, while Bunting & Licht 976, Díaz Luna 460, and Tyson, Dwyer, & Blum 4300 are V. litoralis H.B.K.

Additional citations: ARIZONA: Santa Cruz Co.: Mason, Drouet, MacEwan, & Price 1808 (Mi). MEXICO: Chiapas: Breedlove 14430a (Mi). Federal District: Aguirre Z. 121 (Ip); Carrillo 42 (Ip); J. Espinosa s.n. [X.1954] (Ip); Farías R. 89 (Ip); Gutiérrez & Molina s.n. [1.X.1967] (Ip); Islas F. s.n. [23/III/1962] (Ip); Jiménez R. 151 (Ip); S. López 89 (Mi); Márquez s.n. [23/VII/1962], in part (Ip); Rojano 18 (Ip), 83 (Ip); J. Rzedowski 1135 (Ip), 1226 (Ip). Guanajuato: R. McVaugh 24206 (Mi). Guerrero: Rowell 3061 (Mi). Hidalgo: González Quintero 1207 (Ip). Jalisco: Díaz Luna 209 (Mi); Harker & Mellowes 35 (Ip, Mi). México: Armenta 28 (Ac); Franco R. s.n. [20.VIII.1967], in part (Ip); González Quintero 1178 (Ip); Pineda R. 359 (Rf); Ryesky 101 (Ws), 102 (Ws); J. Rzedowski 20284 (Rf); Salinas M. 85 (Ac); Villegas D. 76 (Ip). Michoacán: Bautista s.n. [13/VIII/1967] (Ip); García Romero s.n. [11.VIII.1968], in part (Ip); Hinton 13022 (Se--117448). Morelos: Flores Crespo 45 (Rf), 293 (Ac); Guerrero O. s.n. [14/IX/1962] (Ip); H. Hernández s.n. [12/VII/1965] (Ac). Nuevo León: Barkley & Alanís 41012 (Go, Rf). Oaxaca: J. Rzedowski 20988 (Ac); C. L. Smith 224 (Ip). Puebla: González Quintero 180 (Ip). Sinaloa: Breedlove & Kawahara 16887 (Rf). Sonora: Pennington 215, in part (Au--264202). Tamaulipas: R. Runyon 884 (Au--268204). Veracruz: Martínez Calderón 1765 (Rf). GUATEMALA: Quezaltenango: Roe, Roe, & Mori 678 (Rf). HONDURAS: Copán: F. A. Barkley 40267 (Rf). EL SALVADOR: San Salvador: C. Garcia 135 (Ca--1284417).

VERBENA CAROLINA f. ALBIFLORA Moldenke

Additional bibliography: Hocking, Excerpt. Bot. A.13: 570 & 571. 1968; Moldenke, Résumé Suppl. 16: 2. 1968; Moldenke, Phytologia 16: 88. 1968; Moldenke, Biol. Abstr. 49: 3252. 1968; Moldenke, Fifth Summ. 1: 75, 81, 84, & 85 (1971) and 2: 674, 688, & 913. 1971.

Recent collectors have encountered this plant in villages and at the edge of deciduous woods, flowering and fruiting in May. Material has been misidentified and distributed in some herbaria as V. officinalis L.

Additional citations: MEXICO: Veracruz: Gutiérrez R. 342 (Rf). GUATEMALA: El Quiché: E. Contreras 5247 (W--2558708).

VERBENA CATHARINAE Moldenke

Synonymy: Verbena catharinensis Moldenke, Fifth Summ. 2: 661, in syn. 1971.

Additional bibliography: Angely, Fl. Anal. Paran., ed. 1, 571. 1965; Moldenke, Phytologia 11: 451--452. 1965; Moldenke, Fifth Summ. 1: 177 (1971) and 2: 661 & 913. 1971.

Hatschbach describes this plant as creeping and rooting, the corollas violet or intensely lilac in color, blooming in October.

Additional citations: BRAZIL: Paraná: Hatschbach 14968 (Mi), 22644 (Mi, N).

VERBENA CHACENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 10: 101. 1964; Moldenke, Fifth Summ. 1: 187 (1971) and 2: 913. 1971.

VERBENA CHEITMANIANA Moldenke

Synonymy: Glandularia cheitmaniana Schnack & Rubens, Bol. Soc. Argent. Bot. 13: 205, hyponym. 1970.

Additional bibliography: Moldenke, Phytologia 13: 188. 1966; Schnack & Rubens, Bol. Soc. Argent. Bot. 13: 205. 1970; Moldenke, Fifth Summ. 1: 200 & 370 (1971) and 2: 913. 1971.

The Ritchie specimen cited below is a mixture with V. rigida Spreng. It is accompanied by a longhand label which I am unable to decipher, but which appears to be only a diagnostic description of the plants. There does not seem to be any indication that the specimens were taken from wild plants, so I assume that they were cultivated where collected.

Additional citations: CULTIVATED: India: C. Ritchie 57, in part (Ed).

VERBENA CHILENSIS Moldenke, Known Geogr. Distrib. Verbenac., ed. 1, 78. 1942.

Additional bibliography: Moldenke, Phytologia 16: 88. 1968; Moldenke, Fifth Summ. 1: 200 (1971) and 2: 671, 776, & 913. 1971.

Bartlett found this plant growing on a mountain ridge above the barrel cactus zone.

Additional citations: ARGENTINA: Mendoza: H. H. Bartlett 19410 (Au--195085, N). Neuquen: O'Donell 2008 (N).

VERBENA CILIATA Benth.

Additional synonymy: Verbena cilliata Benth. ex Moldenke, Résumé Suppl. 18: 14, in syn. 1969. Verbina ciliata Benth. ex Moldenke, Fifth Summ. 2: 708, in syn. 1971.

Additional & emended bibliography: Rydb., Fl. Rocky Mtns., ed. 2, pr. 1, 739 & 740 (1922) and ed. 2, pr. 2, 739 & 740. 1954; Howell & McClintock in Kearney & Peebles, Ariz. Fl., ed. 2, 725 & 727. 1960; Martin & Barkley, Seed Ident. Man. 194. 1961; Turrill in Curtis, Bot. Mag. 174: pl. 409. 1963; Hocking, Excerpt. Bot. A.6: 91. 1963; Marroquin, Cuad. Inst. Invest. Cient. 14: 30 & 56. 1968; Moldenke, Phytologia 16: 186 & 196. 1968; Moldenke, Résumé Suppl. 17: 2 (1968) and 18: 14. 1969; Gilberson & McHenry, Univ. Ariz. Agr. Exp. Sta. Tech. Bull. 186: 7 & 39. 1969; Hafez & Younis, Physiol. Pl. 22: 332. 1969; Kapp, How to Know Pollen 104, 135, 231, & 249, fig. 208 & 276. 1969; Rydb., Fl. Rocky Mtns., ed. 2, pr. 3, 739 & 740. 1969; Rickett, Wild Fls. U. S. 3 (2): [361] & 362, pl. 109 (1969) and 4: 539, [541], & 799, pl. 176. 1970; Jarrett, Ariz. Highways 47 (8): [11] & 38. 1971; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1317 & 1325. 1970; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1799, 1876, & 1877. 1970; Moldenke, Fifth Summ. 1: 39, 42, 53, 58, 61, 63, 65, 75, 78, 81, & 370 (1971) and 2: 659, 663, 667, 708, 767, & 913. 1971; Moldenke, Phytologia 22: 461, 462, 473, & 497. 1972.

Additional illustrations: Rickett, Wild Fls. U. S. 3 (2): [361], pl. 109 (in color) (1969) and 4: [541], pl. 176 (in color). 1970; Jarrett, Ariz. Highways 47 (8): [11] (in color). 1971.

The seeds of this plant are said by Martin & Barkley (1961) to be compressed-oblong and slightly rounded-triangular in cross-section, making them somewhat 2-sided, the rounded back bearing lengthwise ridges toward the lower end and a network of cross-ridges below, the inner face of the two planes meeting in a low ridge, the surface generally covered with whitish papillae, the margin bordered by a narrow flange, the attachment-scar whitish and surrounded by a cuplike extension, the entire seed 1.5—3 mm. long, with no endosperm.

Recent collectors have found this species growing on dry plains and mesas, dry desert plains, flat dry plains, and low banks near water, among large rocks, along dry roadsides, in xerophytic matorral, "pastizales", "zacatal", matorral with Opuntia, maize fields, and Quercus-Cupressus woods, in openings in pine forests, subalpine meadows, Prosopis-Larrea scrub, dry level rocky grasslands, open stony roadside pastures, and matorral roadsides, in sandy, volcanic, or rocky limestone soil. In addition to the months previously recorded, it has been found in anthesis in January.

The Andersons found V. ciliata "locally common in small barrancas with vegetation of shrubs, cacti, and a few small trees, with limestone rocks, in Puebla and among shrubby vegetation in arroyos, abundant by roads, in Guanajuato; García Saucedo found it in xerophilous matorral with Opuntia and Agave in Hidalgo; while Stuessy encountered only "one clump about 4 feet in diameter in Acacia grassland in Chihuahua. Cruz Cisneros found it on "ladera andesítica con vegetación de pastizal con Quercus, Opuntia y Leguminosae", "ladera andesítica con vegetación xerófita", and "ladera basáltica con vegetación de matorral de Acacia y Opuntia".

The corollas are described as having been "lilac" on Asteinza s.n. [5.VII.1966], Iñiguez 74, and Villegas D. 388, "blue" on Pineda R. 348, "violet" on Latotre s.n. [12 May 1968], "lavender-purple" on Dieterle 3575, "lavender" on Anderson & Anderson 5048 and Anderson & Laskowski 3548, "blue-purple" on Stuessy 959, "reddish" on McGregor 16626, "pinkish-purple" on Vilas 39, "reddish-violet" on Vilas 29, "lavender, turning rose-pink in press" on Anderson & Anderson 5314, and "purple" on Dominguez & McCart 8270, Galicia 17, García Saucedo 2607, Hidalgo & Anda s.n. [27.IV. 1967], Nevling & Gómez-Pompa 1075, Powell, Scudday, & Sikes 1434, J. Rzedowski 3051, 3428, 20301, 20543, 22205a, & 23895, and Ventura A. 1545.

Gilberson & McHenry (1969) report that this plant is attacked by both the pycnia and aecia stages of the fungus, Puccinia aristidae Tracy, in Yavapai County, Arizona. Marroquin (1968) cites Alanís 124, 258, & 278 (FCB 2490, 2491, & 2492) and Gutiérrez Lobatos 144 (FCB 1353) from Nuevo León, Mexico.

Mutis 1919, cited below, bears a printed label reading "PLANTS OF COLOMBIA", but the specimen was undoubtedly collected in Mexico. J. Rzedowski 22205a is a mixture with V. menthaefolia Benth. The color illustration purporting to represent V. ciliata in the Rickett publications (1969, 1970) seems definitely to be not this species.

Material of V. ciliata has been misidentified and distributed in herbaria under the names V. ambrosaefolia Rydb. and V. microphylla H.B.K. On the other hand, the J. H. Ehlers 8367, distributed as V. ciliata, is actually V. ambrosifolia Rydb.; Demaree 41126, Hinton & al. 17130, and Mears & Mears 1815 are V. ambrosifolia f. eglandulosa Perry; Hargrove & Tilton HT.500677 is V. bipinnatifida Nutt.; Hargrove & Tilton HT.500652 is V. bracteata Lag. & Rodr.; Ramirez & Cárdenas 13 is V. ciliata var. longidentata Perry; Beasley & Finzel 851 is V. ciliata var. pubera (Greene) Perry; Atwood 1730, C. L. Hitchcock 25540 & 25614, and Munz, Johnson, & Harwood 4254 are V. gooddingii Briq.; Pinkava, Lewis, Noble, & Lehto 11249 is V. gooddingii var. nepetifolia Tidestr.; Pruitt 210 and B. C. Tharp 49-1118 are V. pumila Rydb.; and Barkley, Paxson, & Webster 2493, Rebolledo Vélez s.n. [20. VIII.1967], and J. Rzedowski 1009 are V. teucriifolia Mart. & Gal.

Additional citations: MEXICO: Chihuahua: Stuessy 959 (Au--257767), 965 (Au--257701), 1014 (Au--257670). Coahuila: Johnson & Johnson 1649 (Ws); Latotre s.n. [12 May 1968] (Au--265045); Powell, Scudday, & Sikes 1434 (Au--257010). Durango: Anderson & Laskowski 3548 (Mi); Johnson & Johnson 1712 (Ws). Federal District: Bopp 214 (Ip). Guanajuato: Anderson & Anderson 5048 (Mi). Hidalgo: García Saucedo 2607 (Rf); González Quintero 349 (Au--241298); J. Rzedowski 16927 (Ip), 20543 (Ac), 23895 (Rf); S. Sánchez 37 (Ac). Jalisco: J. V. A. Dieterle 3575 (Mi); R. L. Mc

Gregor 16626 (N). México: Asteinza s.n. [5.VII.1966] (Ip); Cruz Cisneros 499 (Mi), 524 (Ip), 562 (Mi); E. R. García 60 (Rf); Hidalgo y Anda s.n. [27.IV.1967] (Ip); Iñiguez 74 (Ac); M. Padilla 117 (Ac); Pineda R. 348 (Rf); Rebolledo Vélez s.n. [20.VIII.1967] (Ip); J. Rzedowski 15678 (Ip), 20301 (Ip), 22205a, in part (Ip), 22206a (Ip); Vargas N. 49 (Rf); Villegas D. 368 (Ip), 388 (Ip). Nuevo León: Dominguez & McCart 8270 (Au--222192); L. Gilbert 63 (Au--252409); H. Hernández s.n. [21/V/1965] (Ip). Oaxaca: Vilas 29 (Ws), 39 (Ws). Puebla: Anderson & Anderson 5314 (Mi); Guerra M. 16 (Ac); Long & Burch 3321 (N); Manning & Manning 53719 (Au--234068); Ventura A. 1545 (Mi). San Luis Potosí: J. Rzedowski 3051 (Ip), 3428 (Ip). Tamaulipas: Serna 34 (Lk). Tlaxcala: Galicia 17 (Ip--2264, Ip). Veracruz: Nevling & Gómez-Pompa 1075 (G). State undetermined: Mutis 1919 (W--1562721); Schnée s.n. [VII--XII] (Mi).

VERBENA CILIATA var. LONGIDENTATA Perry

Additional synonymy: Verbena ciliata longidentata Perry apud Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1876. 1970.

Additional bibliography: Moldenke, Phytologia 16: 88. 1968; Kapp, How Know Pollen 104, 135, & 231, fig. 208 & 276. 1969; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex, Res. Found. Bot. 6:] 1217 & 1325. 1970; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1876. 1970; Moldenke, Fifth Summ. 1: 58, 62, & 75 (1971) and 2: 663 & 913. 1971; Moldenke, Phytologia 22: 462, 473, & 497. 1972.

Additional illustrations: Kapp, How Know Pollen 104 & 135, fig. 208 & 276. 1969.

Runyon describes this plant as an annual, 1 foot tall, its leaves petiolate or subsessile, cuneate-lanceolate in outline, deeply incised or lobed and dissected, the bark green, the roots fibrous, the flowers odorless, and the fruit a "cylindric capsule" [it is actually a schizocarp]. It has been collected as altitudes from sealevel to 2400 feet. In addition to the months previously reported, it has been collected in anthesis and fruit in January and September. The corollas are described as "blue" on R. Runyon 2497, "violet-purple" on R. Runyon 2361, "rose-purple" on R. Runyon 2495, and "purple" on B. Hutchins 318, C. L. Lundell 10656, and R. Runyon 1576 & 1577. Recent collectors have found it growing in black heavy soil, sandy soil over limestone, and sand along roadsides. Hutchins found it "in calcareous clay loam of barditch" and his specimen is accompanied by a photograph of the plant in situ. Cory found it to be "infrequent in grassland of roadsides" in San Patricio County, Texas. Runyon avers that it blooms from February to April in Cameron County, where it is "a very common verbena covering large patches and producing flowers in abundance, forming large patches in early spring", although for his no. 2495 he notes "occasional in open ground".

Cumbie 53 bears a notation that it is a voucher for anatomical studies; it was misidentified as V. bipinnatifida Nutt., so the anatomical studies, if they have been published, are probably incorrectly said to refer to that species.

Material of V. ciliata var. longidentata has also been misidentified and distributed in some herbaria under the names V. ambrosifolia eglandulosa Perry and V. cloveri var. lilacina Moldenke. On the other hand, the Demaree 7685, distributed as V. ciliata var. longidentata, seems to be var. pubera (Greene) Perry instead.

Additional citations: TEXAS: Bexar Co.: McCullough 6 (N). Cameron Co.: C. L. Lundell 10656 (N); R. Runyon 1576 (Au--269653), 1577 (Au--269654), 2361 (Au--268823), 2495 (Au--268726, Au--269652, N, N), 2497 (Au--268720). Fayette Co.: Ripple 51-580 (Au--226865). Garza Co.: B. Hutchins 319 (Lk). Kent Co.: Cumbie 53 (Lk). Kinney Co.: Strother 263 (Au--238209). San Patricio Co.: Cory 51256 (Mi). Webb Co.: Barrera & Laurel 59 (Lk). Wichita Co.: Whitehouse 9513 (N). Zapata Co.: Novoa & Cantu 18a (Au--245164, Ip). Zavala Co.: Ramirez & Cardenas 13 (Au--245214). MEXICO: Coahuila: G. A. Voss 486 (Sd--63759).

VERBENA CILIATA var. PUBERA (Greene) Perry

Additional bibliography: Howell & McClintock in Kearney & Peebles, Ariz. Fl., ed. 2, 727. 1960; Moldenke, Phytologia 16: 88--89. 1968; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1317 & 1325. 1970; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1876. 1970; Moldenke, Fifth Summ. 1: 51, 58, 62, 63, & 65 (1971) and 2: 522, 663, 691, & 913. 1971.

Recent collectors have found this plant growing in rocky sandy loam, shallow alkaline soil, gravelly sand of Acacia-Yucca-grass communities, and along railroad tracks. Howell & McClintock (1960) describe the plant as "more prostrate and compact and more revolute leaf margins" and maintain that it is found "throughout the range of the species" in Arizona.

The M. Winter 61, distributed as V. ciliata var. pubera, is actually V. pumila Rydb.

Additional citations: TEXAS: Bailey Co.: Rosson 506c (Lk). Garza Co.: B. Jensen 8 (Au--24801). Jeff Davis Co.: Small & Wherry 12072 (Ld). Lubbock Co.: Demaree 7685 (Lk). ARIZONA: Santa Cruz Co.: Beasley & Finzel 851 (N).

VERBENA CLAVATA Ruíz & Pav.

Additional synonymy: Verbena clvaara Ruíz & Pav. apud Pers., Sp. Pl. 3: 346, sphalm. 1819.

Additional bibliography: Pers., Sp. Pl. 3: 346. 1819; Steud., Nom. Bot. Phan., ed. 1, 873. 1821; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 613, 615, 617--618, 621, & 625. 1960; Moldenke, Phytologia 16: 49. 1968; Moldenke, Résumé Suppl. 16: 28. 1968; Moldenke, Fifth Summ. 1: 143 & 192 (1971) and 2: 621, 658, 663, 668, 701, & 913. 1971.

Macbride (1960) keeps V. calcicola Walp. separate from V. clavata Ruíz & Pav., with V. gynobasis Wedd. as a synonym of the former. In his discussion of V. calcicola he says "Included by Schauer in V. clavata R. & P. and conceivably it may be an ecological condition". He cites for it Field Mus. neg. 17409, as well as Gay s.n. from Cuzco, Meyen s.n. and Weberbauer 1455 from Arequipa, and Weberbauer 7464 and Weddell s.n. from Moquegua. For V. clavata he cites Ferreyra 8031, Goodspeed 9184, and Sandeman 4611 from Ancash, Eyerdam 25159, Goodspeed Exped. 15719, Isern 2477, and Mexia 04170 from Arequipa, Isern 2478 from Moquegua, and Metcalf 30374 from Tacna, and says that it occurs also in Chile. I regard the Ferreyra and Mexia collections as var. casmensis Moldenke.

Macbride also attempts to keep V. fissa Hayek as a separate entity, citing for it the following collections: PERU: Ancash: Raimondi s.n. [Hualas]; Weberbauer 2768 (type). Arequipa: Ferreyra 5554; Guenther & Buchtien 133 & 133a; I. M. Johnston 3560; Weberbauer 389. Tacna: Metcalf 30374 [also cited by him as V. clavata]; Weberbauer 7385. He comments: "Near V. thymoides Cham. but more depressed, more densely pubescent, larger flowers; as V. calcicola Walp., cited as a synonym in Index Kewensis, may also prove to be a variant of V. clavata R. & P. as suggested by Johnston. About 3 dm. tall, flowers white or pink, on middle and lower green slopes (Johnston)...F. M. Neg. 17416." He attempts to separate the three supposed species as follows in his key:

Leaves closely canescent strigillose-hispidulous.....V. calcicola
Leaves more or less canescent hirsute-villous-strigose.V. clavata
Leaves lightly hispidulous, greenish.....................V. fissa

Additional citations: PERU: Arequipa: Vargas Calderón 18089 (Ac).

VERBENA CLAVATA f. ALBIFLORA Moldenke

Additional bibliography: J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 618. 1960; Moldenke, Phytologia 11: 453. 1965; Moldenke, Fifth Summ. 1: 143 (1971) and 2: 913. 1971.

VERBENA CLAVATA var. CASMENSIS Moldenke

Additional bibliography: J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 618. 1960; Moldenke, Phytologia 11: 453. 1965; Moldenke, Fifth Summ. 1: 143 (1971) and 2: 913. 1971.

Macbride (1960) says of this variety: "Var. casmensis....has scarcely revolute leaves mostly drying blackish, about 3 mm. wide, with short unevenly spreading twisted trichomes both sides; flowers lilac, fragrant. Leaves resemble those of V. trifida; spreading pubescence differs from both plants."

xVERBENA CLEMENSORUM Moldenke

Synonymy: Verbena clemensorum Moldenke apud Howell, Wasmann Journ. Biol. 10: 377. 1952. Verbena officinalis L. x V. robusta Greene ex Moldenke, Résumé 371, in syn. 1959. Verbena robusta Greene x V. officinalis L. ex Moldenke, Résumé 373, in syn. 1959.

Additional bibliography: Moldenke, Phytologia 11: 453—454. 1965; Munz, Suppl. Calif. Fl. 101. 1968; Moldenke, Fifth Summ. 1: 65 (1971) and 2: 686, 693, & 913. 1971.

Munz (1968) says "V. Clemensorum Moldenke described as possible hybrid between V. officinalis and V. robusta, from Jackson, Amador Co. Coarse herb with glabrous stems, stiff ovate incised lvs. 2.5-8 cm. long; infl. spicate, compound, ± puberulent, elongate; corolla 2 mm. wide."

VERBENA CLOVERAE Moldenke

Additional bibliography: Hocking, Excerpt. Bot. A.6: 91. 1963; Moldenke, Phytologia 16: 186. 1968; Moldenke, Résumé Suppl. 16: 2. 1968; Rickett, Wild Fls. U. S. 3 (2): 365. 1969; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1315, 1316, & 1321. 1970; Correll & Johnston, Man, Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1876 & 1877. 1970; Moldenke, Fifth Summ. 1: 58 & 75 (1971) and 2: 663, 685, 774, & 913. 1971.

Recent collectors have found this plant growing in sandy soil, sandy silt, red sand, or light brown sandy loam, on clay and gravel hills, and along roadsides. Wood reports that it "covers large areas [in Starr County, Texas], common, very similar to no. 692 but flowers twice as large and very showy". Drawe found it "abundant on sandy loam soil in heavily grazed pastures" in Hidalgo County and Atwood in Opuntia-mesquite communities in Dimmit County, while Runyon describes it as having "leaves pinnately cleft, rugose, petiole winged, flowers with no odor, blooming from April to May.....a low herb apparently with perennial roots". Pladeck states that it has "perennial rootstocks". The corolla color is given as "blue" on Drawe 296, R. Runyon 2611, and Stokes 19, as "brilliant blue" on Pladeck s.n. [May 5, 1940], and as "lavender to blue" on A. D. Wood 693. R. Runyon 4869 is a mixture with V. plicata Greene.

Material of V. cloverae has been misidentified and distributed in some herbaria as V. neomexicana var. hirtella Perry and V. scabra Vahl. On the other hand, the Novoa & Cantu 18a, distributed as V. cloverae, is actually V. ciliata var. longidentata Perry.

Additional citations: Brooks Co.: Pladeck s.n. [May 5, 1940] (Ws). Dimmit Co.: Atwood 2035 (N). Edwards Co.: H. R. Reed 47 (Mi). Hidalgo Co.: Drawe 296 (Lk); R. Runyon 2611 (Au--268731), 4869, in part (Au--269729). Jim Hogg Co.: R. Bruno 41 (Lk); Sosa 332 (Lk). Kleberg Co.: F. B. Jones 2977 (Lk). La Salle Co.: Alvarez, Guajardo, Salazar, & McCart 7614 (Lk); F. A. Barkley 17T078 (Ip); A. Castro 55 (Lk). Starr Co.: Ramos & Murillo 52 (Au); R.

Runyon 4885 (Au--266150); A. D. Wood 693 (Au--247078, Au). Webb Co.: Abrigo s.n. [April 12, 1963] (Au--219722); McCart 7289 (Mi); R. L. McGregor 16764 (N); J. Stokes 19 (Lk). Zapata Co.: Flores & Powell 112 (Lk); M. Gonzalez 5 (Au--245139, Ip). Zavala Co.: Guerra, Garcia, & Garcia 40 (Au--244879).

VERBENA CLOVERAE f. ALBA Lundell

Synonymy: Verbena cloverae alba Lundell apud Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1876. 1970.

Additional bibliography: Moldenke, Phytologia 16: 49. 1968; Moldenke, Résumé Suppl. 16: 2. 1968; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1315, 1316, & 1321. 1970; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1876. 1970; Moldenke, Fifth Summ. 1: 58 (1971) and 2: 663 & 913. 1971.

This form has been found in flower and fruit in May.

Additional citations: TEXAS: Dimmit Co.: Tharp & York 27 (Ip).

VERBENA COCCINEA Raf.

Additional bibliography: Moldenke, Phytologia 10: 102—103. 1964; Moldenke, Fifth Summ. 1: 66 (1971) and 2: 793 & 913. 1971.

VERBENA COCHABAMBENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 16: 49. 1968; Moldenke, Fifth Summ. 1: 184 (1971) and 2: 684 & 913. 1971.

VERBENA COMONDUENSIS Moldenke

Bibliography: Moldenke, Phytologia 18: 343--344. 1969; Moldenke, Biol. Abstr. 50: 12948. 1969; Hocking, Excerpt. Bot. A.18: 444. 1971; Moldenke, Fifth Summ. 1: 75 (1971) and 2: 913. 1971.

My wife, my son, and I visited the type locality of this species last year and find that it makes a very conspicuous show as it grows in masses in wet sandy depressions in roadside flats for several miles in the type area.

Citations: MEXICO: Baja California: Moldenke & Moldenke 2922 (Z—type), 25407 (Ac, Ft, Rf, Z).

xVERBENA CONATA Moldenke

Synonymy: Verbena halei Small x V. officinalis L. ex Moldenke, Résumé 365, in syn. 1959. Verbena officinalis L. x V. halei Small ex Moldenke, Résumé 371, in syn. 1959.

Additional bibliography: Hocking, Excerpt. Bot. A.1: 430. 1959; Moldenke, Phytologia 11: 454. 1965; Moldenke, Fifth Summ. 1: 370 (1971) and 2: 649, 672, 686, & 913. 1971.

VERBENA CONCEPCIONIS Moldenke

Additional bibliography: Moldenke, Phytologia 9: 201. 1963; Moldenke, Fifth Summ. 1: 192 (1971) and 2: 913. 1971.

xVERBENA CORRUPTA Moldenke

Additional synonymy: Verbena peruviana (L.) Britton x V. phlogiflora Cham. ex Moldenke, Résumé 372, in syn. 1959. Verbena phlogiflora Cham. x V. peruviana (L.) Britton ex Moldenke, Résumé 372, in syn. 1959.

Additional bibliography: Moldenke, Phytologia 16: 89 & 93. 1968; Moldenke, Résumé Suppl. 16: 28. 1968; Moldenke, Fifth Summ. 1: 370 (1971) and 2: 522, 689, & 913. 1971.

It appears that the cultivars known as "Defiance" (Hurst; Vaughan's; Waller-Franklin; Withamfogg), "Defiance Re-selected" (Watkins & Simpson), "Défiance" (Haage & Schmidt), and "Défiance Purpurea" (Haage & Schmidt) all belong to xV. corrupta rather than to xV. hybrida Voss as previously reported by me. "Defiance" is described as spreading, 12--16 inches tall, blooming in early July (in the U. S. A.), the flowers 1/2 inch wide, rich-scarlet or red with a small creamy-white "eye". Haage & Schmidt describe "Défiance" as "feuer scharlach" [fiery-scarlet] and "Défiance Purpurea" as "purpurroth" [purple-red] in color of corolla.

VERBENA CORYMBOSA Ruíz & Pav.

Additional & emended bibliography: Pers., Sp. Pl. 3: 347. 1819; Steud., Nom. Bot. Phan., ed. 1, 873. 1821; Reiche & Phil., Fl. Chil. 5: 283 & 285. 1910; Angely, Fl. Anal. Paran., ed. 1, 571. 1965; Yotaro, Gard. Pl. World 1: 131. 1965; Moldenke, Phytologia 16: 49--50. 1968; Coats, Pl. Hunters 376. 1969; Heusser, Pollen & Spores Chile 62 & 78. 1971; Moldenke, Fifth Summ. 1: 143, 177, 189, 192, & 370 (1971) and 2: 652, 688, 736, & 914. 1971.

The corollas of this plant are described as "blue-violet" on Burkart 19986. Heusser (1971) says that the pollen has "a tendency to occur chiefly as a pericolpate or pericolporate type with apertures associated with the contact edges of the faces; 41--79 μ", based on a collection by J. Gallardo (SGO 66315), no locality of collection designated. He gives the distribution of the species in Chile as "Atacama--Valdivia" and compares its pollen grains with those of Junellia uniflora (R. A. Phil.) Moldenke, which are syncolporate. He does not specify if he does or does not regard this as sufficiently important to be a generic character.

Coats (1969) reminds us that Elliott & Comber, during their second Chilean trip in 1929--1930, collected for eventual introduction into the horticultural trade the "hardy Verbena corymbosa".

Additional citations: BRAZIL: Santa Catarina: Smith & Klein 13460 (N). URUGUAY: Burkart 19986 (N, W--2595165).

xVERBENA COVASII Moldenke

Additional synonymy: Verbena santiaguensis (Covas & Schnack) Moldenke x V. tenuisecta Briq. ex Moldenke, Résumé 373, in syn. 1959. Verbena tenuisecta Briq. x V. santiaguensis (Covas & Schnack) Moldenke, Résumé 376, in syn. 1959.

Additional & emended bibliography: J. A. Clark, Card Ind. Gen. Sp. Var. issue 191. 1945; Schnack & Covas, Revist. Argent. Agron. 12: 224 & 228. 1945; Moldenke, Phytologia 11: 454. 1965; Moldenke, Fifth Summ. 1: 370 (1971) and 2: 522, 694, 700, & 914. 1971.

VERBENA CRITHMIFOLIA Gill. & Hook.

Additional synonymy: Verbena crithmithfolia Gill. & Hook. apud Beetle, Bot. Rev. 9: 670, sphalm. 1943. Glondularia erithnifolia Gill. & Hook. ex Moldenke, Fifth Summ. 2: 523, in syn. 1971.

Additional bibliography: Autran, Trab. Mus. Farmac. Fac. Cienc. Méd. Buenos Aires 13: 33. 1907; Frenguelli & Cabrera, Rev. Mus. La Plata, n. ser., sec. ofic., 1938: 77. 1939; J. A. Clark, Card Ind. Gen. Sp. Var. issue 183. 1944; Troncoso in Böcher, Hjerting, & Rahn, Dansk Bot. Arkiv. 22 (1): 109. 1963; Troncoso in Cabrera, Fl. Prov. Buenos Aires 5: 137. 1965; Moldenke, Phytologia 16: 186. 1968; Moldenke, Résumé Suppl. 16: 28. 1968; Moldenke, Fifth Summ. 1: 137, 192, & 200 (1971) and 2: 521, 523, 534, 664, 665, 668, & 914. 1971.

Collectors have found this plant growing in dry alkaline soil and in riverbeds, fruiting in April, September, and November (in addition to the months previously reported). Semper 117 bears a label stating that the plant was "rare" where collected (in Mendoza, Argentina), although this same collector reports it as "abundant" in other parts of the same province on other labels. The corollas are said to have been "lilac" on Semper 117, "pinkish-white" on Semper 585 & 616, and "lilac-white" on Semper 65.

Troncoso (1965) comments that "Todas las citas de V. crithmifolia......dadas para la Provincia [Buenos Aires] deben referirse a esta especie [V. hookeriana]."

The Eyerdam, Beetle, & Grondona 23443, distributed as V. crithmifolia, is actually V. hookeriana (Covas & Schnack) Moldenke.

Additional citations: ARGENTINA: Mendoza: Lourteig 894 [Herb. Inst. Miguel Lillo 113935] (N), 925 [Herb. Inst. Miguel Lillo 114040] (N); Semper 7 (N, S), 22 (N), 65 (N), 117 (N), 439 (N), 585 (N), 616 (N). Río Negro: O'Donell 1844 (N).

xVERBENA CROOKSHANKSI Moldenke

Synonymy: Verbena bracteosa x hastata Rydb., Fl. Rocky Mtns., ed. 2, pr. 1, 740. 1922. Verbena bracteata Lag. & Rodr. x V. hastata L. ex Moldenke, Fifth Summ. 2: 656, in syn. 1971. Verbena hastata L. x V. bracteata Lag. & Rodr. ex Moldenke, Fifth Summ. 2: 673, in syn. 1971.

Bibliography: Rydb., Fl. Rocky Mtns., ed. 1, 740 (1917), ed. 2, pr. 1, 740 (1922), ed. 2, pr. 2, 740 (1954), and ed. 2, pr. 3, 740. 1969; Moldenke, Fifth Summ. 2: 656, 673, 914, & 967. 1971.

Rydberg (1917) describes this hybrid as "Resembling most V. bracteosa in habit, but stouter, more erect, with broad, laciniate rather stout dissected leaves and shorter bracts. Neb.—Colo."

VERBENA CUNEIFOLIA Ruíz & Pav.

Additional bibliography: Pers., Sp. Pl. 3: 346. 1819; Steud., Nom. Bot. Phan., ed. 1, 873. 1821; Reiche & Phil., Fl. Chil. 5:

287. 1910; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 614 & 619. 1960; Moldenke, Phytologia 16: 50. 1968; Moldenke, Fifth Summ. 1: 143 & 192 (1971) and 2: 665, 701, & 914. 1971.

Vargas Calderón found this species in flower and fruit in October. Macbride (1960) cites Field Mus. neg. 17411 and the following specimens: PERU: Ancash: Raimondi s.n. [Pomabamba, Huaraz], Weberbauer 3060. Cuzco: Herrera 1409. Huancavelica: Raimondi s.n. [Tayacaya]. Huánuco: Macbride & Featherstone 1210. Junín: Soukup 3537 & 3970, Stork 10920. San Martín: Ruíz & Pavon s.n. [Moyobamba], type.

Additional citations: PERU: Ancash: Vargas Calderón 10320 (Ac).

VERBENA CURTISII Moldenke

Additional bibliography: Moldenke, Phytologia 10: 103. 1964; Moldenke, Fifth Summ. 1: 23 & 370 (1971) and 2: 793 & 914. 1971.

xVERBENA DEAMII Moldenke

Additional synonymy: Verbena bracteata Lag. & Rodr. x V. stricta Vent. ex Moldenke, Résumé 359, in syn. 1959. Verbena stricta Vent. x V. bracteata Lag. & Rodr. ex Moldenke, Résumé 375, in syn. 1959.

Additional bibliography: Rydb., Fl. Rocky Mtns., ed. 2, pr. 1, 740 (1922) and ed. 2, pr. 2, 740. 1954; Hitchc., Cronq., & Ownbey, Vasc. Pl. Pacif. Northwest 4: 244. 1959; Moldenke, Phytologia 16: 50. 1968; Moldenke, Résumé Suppl. 16: 1, 2, & 28. 1968; Rydb., Fl. Rocky Mtns., ed. 2, pr. 3, 740. 1969; Moldenke, Fifth Summ. 1: 15, 34, 37, 40, 41, 43, 45, 51, & 53 (1971) and 2: 656, 657, 666, 697, 698, & 914. 1971.

Fell & Fuller found this hybrid growing along roadsides in Winnebago County, Illinois. Patterson notes that in Henderson County of the same state he found some plants procumbent, some ascending, and some erect -- which is to be expected of the hybrid, considering its parentage.

Additional citations: ILLINOIS: Henderson Co.: H. N. Patterson s.n. [Oquawka, July] (Pa, Pa, Pa). Winnebago Co.: Fell & Fuller 56-301 (Ws).

VERBENA DELICATULA Mart.

Additional bibliography: Moldenke, Phytologia 10: 104. 1964; Moldenke, Fifth Summ. 1: 75 (1971) and 2: 665 & 914. 1971.

VERBENA DELTICOLA Small

Additional bibliography: Hocking, Excerpt. Bot. A.6: 91. 1963; Moldenke, Phytologia 16: 186. 1968; Moldenke, Résumé Suppl. 16: 2. 1968; Rickett, Wild Fls. U. S. 3 (2): 364. 1969; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1316, 1317, & 1322--1323. 1970; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1799, 1846, & 1876. 1970; Moldenke, Phytologia 22: 497. 1971; Moldenke, Fifth Summ. 1: 58 & 75 (1971) and 2: 665 & 914. 1971.

[to be continued]

brown. Dorsal sepal elliptic-oblong, acute or obtuse, about 10 mm. or less long. Lateral sepals very similar, slightly oblique, sharply acute, about as long as the dorsal sepal. Petals spatulate-cuneate ("obovate"), obliquely acute to obtuse, a little shorter than the sepals. Lip adnate to the basal third of the column; lamina deeply 3-lobed, cuneate at the base, rhombic in outline, 5.6–8 mm. long and distinctly narrower across the lateral lobes; lateral lobes small, dentiform, semiovate; mid-lobe more or less larger, ovate or subquadrate-ovate, more or less acute; disc between the lateral lobes occupied by a large sulcate callus or by 2 more or less separated fleshy calli. Column short and stout, 3-toothed at the gradually dilated apex, somewhat over half as long as the sepals. Ovary triquetrous.

Junín: La Merced, Hacienda Schunke, about 1200 meters, *Macbride 5629, 5780.* Schunke Hacienda, about San Ramón, 1400–1700 meters, in dense forest, *Killip & Smith 24863.*—Loreto: Mountains north of Moyobamba, 1100 meters, in savanna woods consisting mainly of shrubs, *Weberbauer 4633* (type).

Epidendrum ferrugineum Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 245. 1798.

Huánuco: In Chinchao, on trees and rocks of wooded mountains, toward Macora, *Pavón s.n.*

This is an unidentified species.

Epidendrum fimbriatum HBK. Nov. Gen. et Sp. 1: 351. 1816; Lindl. Fol. Orch. Epidendrum 83, no. 263. 1853. *Epidendrum alternans* Lindl. Hook. Journ. Bot. 3: 88. 1841.

Plant terrestrial (rarely epiphytic), rather slender, up to about 40 cm. high. Stems caespitose, often with a decumbent rooting base, simple or more often loosely branched, entirely concealed by close, tubular sheaths, distichously leafed above. Leaves linear-lanceolate (more rarely linear or narrowly elliptic-oblong), up to 6.6 cm. long and 6 mm. wide, obtuse or obliquely bilobulate to acute at the apex, deeply clasping at the base, erect-spreading, subcoriaceous, often minutely cartilaginous-serrulate. Inflorescence terminal, commonly simply racemose above (rarely with 1 or 2 short lateral branches), up to 16 cm. tall, few- to many-flowered, with the rachis more or less fractiflex. Floral bracts spreading, minute to conspicuous, ovate to oblong-lanceolate, up to (rarely) 9 mm. long. Flowers small, white, pale rose-colored or white tinged or spotted with violet, rather fleshy. Dorsal sepal lanceolate-oblong to elliptic-oblong, retuse to subacute, up to about 5.6 mm. long. Lateral sepals similar but commonly a little broader, somewhat oblique. Petals about as long as the sepals but much narrower, linear-oblanceolate or cuneate-spatulate, rounded at the apex. Lip adnate to the column about to its middle; lamina simple, rhombic-ovate to round-ovate in outline, about 4 mm. or less long, nearly as wide or wider, irregularly dentate-fimbriate except toward the base; disc with a pair of short keels at the base. Column short, stout, about 3 mm. or less long.

Peru: San Carlos, *Mathews 1897* (*E. alternans* var. *β*).—Cajamarca: Prov. of Cutervo, trail between Socota and Tambillo, 3200 meters, common on clay banks beside trail, *Stork & Horton 10165*.—Amazonas, Huánuco, Puno, fide Schlechter, Fedde Repert. Beih. 9: 147. 1921. Also Venezuela, Colombia (type) and Ecuador.

Epidendrum fimbriatum HBK. var. **rhomboglossum** (Kränzl.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 224. 1944. *Epidendrum rhomboglossum* Kränzl. Engler Bot. Jahrb. 54, Beibl. 117: 28. 1916. *Epidendrum integrilabium* A. & S. Sched. Orch. 8: 46. 1925.

Plant very similar to the type vegetatively, but differing in having often larger flowers (sepals up to 8 mm. long) with the lamina of the lip up to 7 mm. long, more or less longer than broad, with entire or subentire margins.

Cuzco: "Pillahuata," Cerro de Cusilluyoc, 3300–3500 meters, on rocky banks, *Pennell 13923*. Pillahuata Valley, *Herrera 3331*. Valley of the Paucartambo, 3000 meters, *Herrera 3367*. Prov. of Paucartambo, above Pillahuata, 2600–2800 meters, on dry banks, *West 7059*. Same locality as last, 2300–2700 meters, on moist slopes, *Vargas 77*.—Huánuco: Prov. of Huánuco, valley of Río Pozuzo, tributary of Río Palcazu, 1900–2000 meters, on cliffs, *Weberbauer 6734* (type of *E. rhomboglossum*).—Puno: Prov. of Sandía, Sto. Domingo area, 1550 meters, *McCarroll 138*. Also Bolivia (type of *E. integrilabium*).

Epidendrum Forgetianum Hort. ex Gard. Chron. ser. 3, 13: 752. 1893.=nomen subnudum.

Epidendrum fragrans Sw. Prodr. Veg. Ind. Occ. 123. 1788; Cogn. Martius Fl. Bras. 3, pt. 5: 83. 1898. *Epidendrum cochleatum* Curtis, Bot. Mag. 5, t. 152. 1792, not L. *Epidendrum lineatum* Salisb. Prodr. 10. 1796. *Epidendrum aemulum* Lindl. Bot. Reg. 22, t. 1898. 1836.

Plant epiphytic, with a stout, creeping rhizome. Pseudobulbs more or less distant, fusiform to ellipsoid (rarely cylindric, ovoid or obovoid), up to 13 cm. long, often more or less arcuate, somewhat concealed by imbricating sheaths when young, 1- (very rarely 2-) leaved at the summit. Leaf oblong-elliptic or oblong (rarely oblong-linear), up to 30.5 (rarely 35) cm. long and 4.6 cm. wide, obtuse or acute, sessile or subsessile at the clasping base, coriaceous. Inflorescence shorter than the leaves, racemose, laxly few- to several-flowered above, with a more or less conspicuous, conduplicate spathe at the base; rachis up to 17 cm. long. Floral bracts minute. Flower medium-sized to large, more or less fleshy, sepals and petals spreading, white, greenish white, greenish or yellowish, lip whitish with purple stripes. Dorsal sepal linear-lanceolate, long-acuminate, up to 3 (rarely 3.5) cm. long, convex, more or less dorsally carinate. Lateral sepals similar, slightly oblique. Petals lanceolate to ovate-lanceolate or elliptic-lanceolate, acuminate to long-acuminate, shorter but commonly broader than the sepals. Lip adnate to the column up to above the middle; lamina simple, round-ovate, up to 1.8 cm. long and 1.5 cm. wide below, more or less abruptly long-acuminate (rarely acute), concave; disc fleshy-thickened at the base. Column short, stout, 3-toothed at the apex, about 7 mm. or less long, with a narrow, more or less lacerate-dentate lamina in front of the middle tooth.

Junín: Chanchamayo Valley, 1800 meters, *Schunke s.n., 559.* Same locality, 1500 meters, *Schunke 1169.*—Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 1169, 1405, 10082.* Valley of the Río Marañon from Iquitos to the mouth of the Río Santiago at Pongo de Manseriche, 160 meters, ca. 77° 30′ West Long., *Tessmann 4094.* —Piura, fide Schlechter, Fedde Repert. Beih. 9: 148. 1921.

A widespread and variable species extending from Mexico to Panama, the West Indies (type of *E. fragrans, E. cochleatum,* and *E. lineatum*), and northern South America to Brazil (type of *E. aemulum*), Bolivia and Peru.

Epidendrum Friderici-Guilielmi Reichb. f. & Warsc. Bonpl. 2: 110. 1854; Reichb. f. Xen. Orch. 1: 158, t. 51. 1856; Cogn. & Goossens, Dict. Icon. Orch. Epidendrum, t. 12, 1899. *Epidendrum huacapistanae* Kränzl. Fedde Repert. 1: 183. 1905.

Plant stout, up to 1.5 meters tall. Stems apparently approximate from an abbreviated rhizome, entirely concealed by tubular sheaths which are leaf-bearing above. Leaves 4 or more, distichous, obovate-oblong to elliptic or oblong-elliptic, subobtuse to sharply acute, narrowed to a deeply clasping base, up to 30 cm. long and 10.2 cm. wide, chartaceous. Inflorescence terminal, erect or nodding, up to about 43 cm. long, racemose, densely or subdensely several- to many-flowered above, the peduncle being more or less concealed by a stout, elongate, conduplicate spathe. Floral bracts minute. Pedicellate ovary very slender and elongate, up to 10 cm. long. Flowers purple or crimson, with spreading segments. Dorsal sepal oblong-lanceolate or elliptic-lanceolate, acute or acuminate, 13–23 mm. long. Lateral sepals similar, oblique. Petals linear-oblanceolate, acute or acuminate, a little shorter than the sepals. Lip adnate to the column up to its apex; lamina sharply 3-lobed, about 5–10 mm. long in the middle and 8 mm. or more wide near the base, deeply cordate at the base; lateral lobes obliquely suborbicular; mid-lobe ligulate-oblong (rarely elliptic-ligulate), porrect, abruptly narrowed above to a subacute or acuminate tip; disc with a pair of complanate calli at the base and a thickened line through the center. Column 8–12 mm. long, strongly dilated above in front, more or less arcuate.

Peru: Sources of the Marañon River, 1800–2400 meters, *Warscewicz s.n.* (type).—Cuzco: Marcapata, Quispicanchis, 2400–3000 meters, epiphyte, *Vargas 1338.*—Junín: Prov. of Tarma, between Palca and Huacapistana, 1700–2400 meters, in thickets, *Weberbauer 1778* (type of *E. huacapistanae*). Also Bolivia.

Epidendrum frigidum Linden ex Lindl. Bot. Reg. 31, Misc. 76, no. 48. 1845; Lindl. Orch. Linden. 7, no. 36. 1846; Fol. Orch. Epidendrum 89, no. 286. 1853; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 226. 1944. *Epidendrum macrodonax* Schltr. Fedde Repert. Beih. 9: 88. 1921; Mansf. Fedde Repert. Beih. 57: t. 119, nr. 467. 1929.

Plant stout, up to 3 meters high, on trees or rocks. Stem stout, apparently simple, strict, densely leafy, entirely concealed by close, tubular leaf-sheaths, about 6–10 mm. in diameter. Leaves erect or suberect, oblong-lanceolate or linear-lanceolate, obtuse or acute with an apicule at the apex, deeply clasping at the base, rigid, commonly with strongly revolute margins in the dried specimen, up to 11 cm. long and 3 cm. wide (but usually much narrower). Inflorescence terminal, paniculate, decurved above, with more or less elongate, slender branches, crowning a rather short, subcompressed peduncle; branches of the panicle densely or subdensely many-flowered, with small, ovate-deltoid, spreading floral bracts. Flowers small, fleshy, pale rose-colored. Sepals more or less verrucose without. Dorsal sepal ovate, lanceolate-oblong or ovate-oblong, obtuse, 5.5–11 mm. long. Lateral sepals a little longer and wider, oblong-ovate or oblong-elliptic, very oblique, more or less carinate without. Petals narrowly linear, obtuse, nearly as long as the sepals. Lip adnate to the column up to the upper portion; lamina simple, deeply concave and surrounding the apex of the column, up to 8 mm. in greatest length, broadly cordate-ovate when forcibly expanded, more or less acute, somewhat broader than long; disc at the base with a pair of minute calli. Column short, stout, straight, terminating in an oblique, subquadrate auricle on each side, about 5.8 mm. or less long at the back.

Cuzco: "Valle de Santa Ana, alturas del Chaco," *Herrera 2119* (Bues coll.).—Huánuco: Mountains southeast of Monzón, 3300–3500 meters, in thicket, *Weberbauer 3375* (type of *E. macrodonax*). Also Venezuela (type of *E. frigidum*) and Colombia.

I have examined photographs of Lindley's type of *E. frigidum.*

Epidendrum frigidum Lind. ex Lindl. var. **stenophyton** (Schltr.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 227. 1944. *Epidendrum stenophyton* Schltr. Fedde Repert. Beih. 9: 93. 1921; Mansf. Fedde Repert. Beih. 57: t. 121, nr. 476. 1929.

Plant differs from the type in having slender stems (4 mm. or less across the leaf-sheaths) which are usually simple but rarely branched, in having small leaves (up to 6 cm. long and 8 mm. wide), in having abbreviated, commonly racemose inflorescences, and in having flowers which are greenish white (sometimes pink-tinged) or pale yellow.

Amazonas: East of Chachapoyas, 2700–2800 meters, *Weberbauer 4419* (type of *E. stenophyton*).—Cuzco: Prov. of Urubamba, on trail from Puyupata to Sayacmarca, 3600 meters, *Vargas 2907.* Prov. of Urubamba, near Wenner Gren ruins, 3600 meters, "wet sphagnum on rocky bank, much fog and rain," *Metcalf 30752.*—Huánuco: Mito, about 2700 meters, "firm grassy cliffs of upland gorge," *Macbride 3372.* Tambo de Vaca, about 4000 meters, on trees, *Macbride 4345.* Also Venezuela and Ecuador.

Epidendrum frutex Reichb. f. Xen. Orch. 1: 95, t. 37. 1855.

Plant terrestrial, tall, robust, about 78 cm.–5 meters high. Stems stout, caespitose, entirely concealed by tubular, verrucose, leaf-bearing sheaths. Leaves numerous, distichous, oblong-ligulate, narrowed to an obtusely acute or apiculate apex, deeply clasping at the base, up to 22.5 cm. long and 3 cm. wide, coriaceous, with the margins commonly strongly revolute in the dried specimen. Inflorescence terminal, compound-paniculate, commonly erect (rarely recurved), shortly peduncled, up to 19.3 cm. high, with numerous distichous, more or less pendent branches; branches and branchlets densely or subdensely several-flowered, rather short, with a fractiflex rachis. Floral bracts small, deltoid, acute or acuminate, concave, fleshy, spreading. Flowers very small, fleshy, rigid, yellow, greenish yellow, or green tinged with brown or purple. Dorsal sepal ovate-oblong or oblong-lanceolate, obtuse or acute, about 6 mm. or less long. Lateral sepals a little longer but much wider, very obliquely triangular-ovate or elliptic-ovate, dorsally carinate above. Petals nearly as long as the dorsal sepal, linear or oblanceolate-linear, obtuse to subacute. Lip about as long as the lateral sepals (including the claw), adnate to the column up to its apex; lamina simple, concave-conduplicate, acute, transversely ovate when forcibly expanded and up to about 7 mm. wide (broader than long), broadly rounded or subcordate at the base, with a thickened line through the center. Column very short and stout, up to 3.5 mm. long from the base to the apex of the tooth on each side.

Huánuco: Playapampa, about 2700 meters, "open sphagnum uplands," *Macbride 4892.* Also Venezuela, Colombia (?type) and Ecuador.

Epidendrum fruticulum (as **fruticulus**) Schltr. Fedde Repert. Beih. 9: 84. 1921; Mansf. Fedde Repert. Beih. 57: t. 118, nr. 462. 1929.

Plant epiphytic, rather slender for the genus, up to 40 cm. or more long. Stems lax or arcuate, loosely 2- or 3-forked above, with numerous abbreviated, appressed branchlets, entirely invested by short, tubular, imbricating sheaths (evanescent on the lower portion), bearing groups of 2 or 3 distichous leaves on or at the base of the branchlets. Leaves oblong or oblong-elliptic ("ligulate"), apiculate at the rounded or bilobulate apex, deeply clasping at the base, up to 3.5 cm. long, 5–9 mm. wide, coriaceous, spreading. Inflorescences numerous, terminal at the tips of the abbreviated branchlets, racemose, few- (5- to 8-) flowered, spreading or recurved in the course of development, with a very short peduncle. Floral bracts small, linear-lanceolate. Flowers rather small, sulphur-yellow, with spreading segments. Dorsal sepal oblanceolate-oblong, acute or acuminate with a calyptriform apex, about 8.2 mm. long. Lateral sepals very obliquely obovate-oblong, acuminate, dorsally carinate above, slightly longer and markedly broader than the dorsal sepal. Petals shorter than the sepals, oblanceolate-linear, obtuse to subacute, lightly falcate above. Lip adnate to the column up to its apex; lamina deeply 3-lobed, cordate at the base, 4.2–5 mm. long in the center and 7–8 mm. wide across the lateral lobes, convex in natural position; lateral lobes obliquely ovate-dolabriform with the rounded outer margins irregularly and minutely denticulate; mid-lobe a little smaller, porrect, subquadrate below, dilated above with a bluntly 3-toothed apex; disc with a pair of fleshy calli at the base and a thickened line in the middle. Column rather large, abruptly dilated in front on the upper half, very oblique at the base, 6.2 mm. or less long, terminating on each side in a transversely oblong auricle.

Cuzco: "Pillahuata," Cerro de Cusilluyoc, 2800–3100 meters, in thicket, *Pennell 14127*.—Junín: Mountains west of Huacapistana, 3000–3100 meters, *Weberbauer 2053* (type).

Epidendrum Funkii Reichb. f. Linnaea 22: 839. 1849. *Epidendrum brachycladium* Lindl. Fol. Orch. Epidendrum 60, no. 186. 1853. *Epidendrum brachycladium* (*β.*) *crassipes* Lindl. l.c. *Epidendrum crassipes* Kränzl. Engler Bot. Jahrb. 54, Beibl. 117: 25. 1916.

Plant medium-sized to large and stout, with a long creeping rhizome, up to about 1.6 meters high. Stem near the base with a more or less conspicuous, fusiform dilation which is about 15 cm. or less long, distichously leafed above, entirely concealed by close, tubular sheaths, which are evanescent below. Leaves up to 11, loose, oblong-linear to elliptic-oblong, up to 22.5 cm. long and 2.5 cm. wide, obtuse and often apiculate, ascending. Inflorescence much surpassing the leaves, consisting of an elongate peduncle which is entirely concealed by close, scarious, imbricating sheaths, terminating in one or more distant, densely flowered, short racemes which are rarely branching. Floral bracts generally short and much exceeded by the slender pedicellate ovary. Flowers small, pink or rose-purple to lavender or white. Dorsal sepal obovate-oblanceolate or oblong-obovate, acute to obtuse, up to 10 mm. long and 4 mm. wide. Lateral sepals very obliquely oblanceolate-obovate or oblong-obovate, acute and mucronate from a dorsal subapical keel, slightly longer than the dorsal sepal. Petals cuneate-spatulate or oblanceolate, more or less oblique, acute to obtuse, with the margins more or less denticulate, about as long as the dorsal sepal and either narrower or wider above. Lip adnate to the column up to its apex, distinctly exceeding the sepals; lamina deeply 3-lobed, transverse, up to 8 mm. long and 20 mm. wide; lateral lobes wide-spreading, obliquely obovate-cuneate with the outer margins rounded or subtruncate and crenulate to lacerate-dentate; mid-lobe smaller or subequal, from a more or less distinct subquadrate base dilated and deeply bilobed at the apex; disc bicallose at the base, with a short or long fleshy ridge between the calli. Column short or long, gradually dilated above, with a transverse dorsally acute auricle on each side at the apex, up to 6.1 mm. long at the back.

Ayacucho: Apurimac Valley, Quebrada Pincopa, 2800 meters, *Herrera 1456*. Ccarrapa, between Huanta and Río Apurimac, 1500 meters, terrestrial on open hillside, *Killip & Smith 22342*. Same locality, 1000 meters, terrestrial on wooded hillside, *Killip & Smith*

22470.—Cajamarca: Prov. of Jaén, left lateral valley of the River Huancabamba, above Shumaya, 2400–2500 meters, in grassy plains of slight periodicity with scattering evergreen shrubs, *Weberbauer 6292* (type of *E. crassipes*).—Cuzco: "Pillahuata," Cerro de Cusilluyoc, 2200–2400 meters, on rocky cliff above stream, epiphytic, *Pennell 13985*. Same locality, 2200–3000 meters, terrestrial in thickets and forest, *Pennell 14063*.—Huánuco: *McLean, Mathews* (type of *E. brachycladium*) fide Lindley. Muña, about 2100 meters, epiphyte "on sunny branches of dry woods," *Macbride 3973*.—Junín: Huacapistana, 1800–2400 meters, on open hillside, *Killip & Smith 24201*. Carpapata, above Huacapistana, about 2400 meters, on open hillside, *Killip & Smith 24348*. Prov. of Tarma, between Palca and Carpapata, 2900 meters, "all over the hills, mostly on shallow soil pockets in boulders," *Stork 10961*. Above Carpapata, mountain slopes, 2350–2400 meters, *Ferreyra 3736*. Prov. of Tarma, Agua Dulce, 2400 meters, on mountain slope covered with grass-steppe, *Woytkowski 35466, 35467*. Satipo, Concepción, Km. 160, terrestrial on roadside, *Seibert 2386*.—Puno, fide Schlechter, Fedde Repert. Beih. 9: 146. 1921. Also Venezuela, Colombia (type of *E. Funkii*) and Bolivia.

Epidendrum gastrochilum Kränzl. Engler Bot. Jahrb. 37: 384. 1906.

Plant epiphytic, about 30 cm. or less tall, loosely branching above. Stems slender, entirely concealed by tubular sheaths which are evanescent through the basal portion, scarious in the lower part of the plant and leaf-bearing except at the base of the branches. Leaves distichous, narrowly lanceolate-oblong or linear-oblong (rarely elliptic-oblong near the base of the branches), abruptly truncate above with a bilobulate, apiculate apex, clasping at the base, up to 4.5 (rarely 6) cm. long and 6 mm. wide. Inflorescences terminal, racemose, pendent, loosely 3- to 4-flowered, with a very short peduncle. Floral bracts very minute, triangular. Flowers greenish brown or olivaceous. Dorsal sepal elliptic-lanceolate or "oblong," acute or acuminate, nearly 1.5 cm. long. Lateral sepals somewhat longer and broader, obliquely and broadly elliptic-lanceolate, acuminate. Petals about as long as the dorsal sepal, oblanceolate-linear, acute, "narrowly lanceolate, acuminate." Lip adnate to the column and forming a broad sack at the base, nearly 2 cm. long including the claw; lamina simple, broadly obovate-oblong, sinuate-retuse in front with a triangular apicule in the center, denticulate throughout, about 8 mm. wide; disc with 4 short keels near the base. Column lightly recurved, probably stout, about 8 mm. long.

Cajamarca: Prov. of Chota, mountains west of Huambos, 2900–3000 meters, in sclerophyllous vegetation consisting of bushes with small trees interspersed, *Weberbauer 4172*.

This plant may be referable to the genus *Diothonea*, but I have seen only a photographic record of the type without a distinct lip.

The above diagnosis was amplified by an examination of this photograph.

Epidendrum geminiflorum HBK. Nov. Gen. & Sp. 1: 354. 1816; Lindl. Fol. Orch. Epidendrum 49, no. 155. 1853. *Epidendrum cajamarcae* Schltr. Fedde Repert. Beih. 9: 81. 1921; Mansf. Fedde Repert. Beih. 57: t. 117, nr. 459. 1929.

Plant epiphytic, creeping, with stiff ascending, lateral branches. Stems (lateral branches) entirely or mostly concealed by loose, tubular sheaths, 3- to 4-leafed near the summit, about 15 cm. high, more or less flexuous. Leaves oblong-elliptic or "oblong," obtuse or shortly bilobulate at the apex, clasping at the base, up to 6.5 cm. long and 2 cm. wide, more or less coriaceous, spreading. Inflorescence terminal, 2- or 3-flowered, subumbellate, with the abbreviated peduncle concealed by a conspicuous, conduplicate spathe 2–4 cm. long. Floral bracts small, deltoid. Pedicelled ovary elongate, 2–4.5 cm. long. Flowers coriaceous, yellowish green or brownish green. Sepals with revolute margins. Dorsal sepal oblong-lanceolate, about 1.8 cm. or less long, subacute to acuminate. Lateral sepals similar but oblique, obtuse to acuminate. Petals obliquely linear-lanceolate, nearly as long as the sepals. Lip adnate to the column up to its apex; lamina broadly ovate in outline, cordate at the base, 3-lobed at the middle, about 1.2 cm. long, up to 1 cm. wide near the base; lateral lobes rounded or semiquadrate; mid-lobe triangular-ovate; disc with 2 or 3 carinate calli at the base. Column short, gradually dilated upward, about 7 mm. long.

Cajamarca: Chugua, northwest of Hualgayoc, 2700–2900 meters, *Weberbauer 4102* (type of *E. cajamarcae*). Also Colombia (type of *E. geminiflorum*) and Ecuador.

I have examined a photograph of Lindley's concept of this species.

Epidendrum Giroudianum Reichb. f. Bonpl. 4: 327. 1856.

Plant tall, rather stout, up to about 73 cm. or more tall. Stem stout, entirely concealed by tubular, leaf-bearing sheaths, about 30 cm. or more high. Leaves distichous, numerous, elliptic-oblong or oblong-lanceolate, more or less narrowed to an obtuse apex, clasping at the base, up to 9.7 cm. long and 2 cm. wide. Inflorescence terminal, elongate, racemose at the apex; peduncle long, concealed by numerous close, tubular, more or less imbricating sheaths; raceme rather short, loose at the base, dense above, many- (10- to 12-) flowered. Flowers fleshy, purplish-red, with spreading segments. Dorsal sepal elliptic-lanceolate, acute, about 1.5 cm. long. Lateral sepals similar, apparently a little broader, oblique. Petals nearly as long as the sepals, elliptic or oblanceolate-elliptic. Lip adnate to the column up to its apex; lamina deeply 3-lobed, cordate at the base, bilobed at the apex, about 7 mm. long in the center and 7 mm. or more wide across the lateral lobes; lateral lobes strongly retrorse, subquadrate or "flabellate" with the anterior margin revolute and the outer subtruncate margin sharply dentate; mid-lobe porrect, from a cuneate-subquadrate base abruptly dilated into 2 spreading, rounded lobules which are sharply dentate in front; disc occupied in the center of the base by a conspicuous, 7- to 9-lobulate, depressed callus. Column about 5 mm. long, dilated above, with a tridentate clinandrium.

Peru: Habitat not recorded, *Warscewicz s.n.* (cult. Gireoud).

Plant described from the original citation together with drawings of the type, from the Reichenbach Herbarium.

Epidendrum gladiatum Lindl. Gen. & Sp. Orch. 106. 1831. *Epidendrum vandifolium* Lindl. Journ. Hort. Soc. London 4: 269. 1849. *Epidendrum Juergensenii* Reichb. f. Gard. Chron. n.s. 14: 524. 1880.

Plant variable, epiphytic on trees and rocks, about 52 cm. or less high up to the apex of the inflorescence. Stems approximate from an abbreviated rhizome, entirely concealed by close, tubular, imbricating sheaths which are scarious and evanescent below and leaf-bearing through the upper part, up to 46 cm. long, erect or lightly arcuate. Leaves few to numerous, linear-oblong to linear-lanceolate (rarely elliptic-oblong or narrowly linear), abruptly acute to obtuse, deeply clasping at the base, up to 18 cm. long and 1.7 cm. wide, rigidly ascending, commonly thickly coriaceous. Inflorescence terminal, usually decurved, consisting of a single raceme or a few- to many-branched (but congested) panicle which is shorter than the leaves, having an abbreviated peduncle which is concealed by distichously imbricating, marcescent sheaths. Floral bracts very small. Pedicellate ovary rather long and slender. Flowers medium-sized, greenish, yellowish or russet, often tinged with vinaceous (rarely lavender or purple). Segments spreading, commonly with revolute sides. Dorsal sepal oblong-oblanceolate to obovate-cuneate, obtuse to abruptly acute, up to 11.9 mm. long. Lateral sepals oblong-obovate or oblong-oblanceolate, very oblique, about as long as the dorsal sepal but wider. Petals linear-spatulate or narrowly cuneate-oblanceolate, about equaling the sepals in length, obtuse to rounded at the apex. Lip adnate to the column up to its apex; lamina sharply 3-lobed, cordate at the base, about 7.5 mm. or less long in the center, 11.6 mm. or less wide across the lateral lobes near the base; lateral lobes obliquely suborbicular to semiorbicular or rounded-subquadrate, with a rounded base, irregular outer margins and a more or less straight anterior margin; mid-lobe porrect, from a subquadrate base somewhat dilated into a bilobed apiculate apex (more rarely cuneate-quadrate in outline); disc with a pair of rounded calli at the base and commonly with 3 fleshy ridges in front. Column 8 mm. or less long, abruptly dilated in front above the middle.

Peru: Habitat unknown, *Pavón s.n.* (type).—Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 148. 1921. A species apparently frequent in Mexico (where commonly known as *E. vandifolium* Lindl. or *E. Juergensenii* Reichb. f.). Also Bolivia, fide Schlechter, Fedde Repert. Beih. 10: 70. 1922.

Epidendrum glossoceras Reichb. f. & Warsc. Bonpl. 2: 110. 1854.

Plant slender, up to 60 cm. high. Stem flexuous, nearly concealed by close, tubular, leaf-bearing sheaths. Leaves distichous, linear or linear-lanceolate, acuminate, up to 15 cm. long and 8.5 mm. wide, ascending, rather numerous. Inflorescence terminal, racemose, about 13 cm. long, the peduncle being concealed by 1 or 2 lanceolate, foliaceous spathes. Raceme loosely many-flowered, up to 10 cm. long. Floral bracts small, triangular-setaceous, three times shorter than the pedicelled ovary. Flowers small, three times smaller than those of *E. cornutum.* Sepals "lanceolate" or elliptic-lanceolate, acuminate. Petals linear-ligulate, somewhat shorter than the sepals. Lip adnate to the column up to its apex; lamina deeply 3-lobed; lateral lobes erect, subquadrate, broader than long, with the truncate-retuse outer margin minutely crenulate; mid-lobe porrect, linear-lanceolate or triangular-linear; disc with a broad, prostrate, triangular callus at the base of each lateral lobe produced in front into a long central keel extending through the mid-lobe. Column decurved, dilated above.

Peru: Habitat not recorded, *Warscewicz s.n.*

This description was drawn from the original citation and a drawing from the Reichenbach Herbarium.

Epidendrum gracilicaule Reichb. f. & Warsc. Bonpl. 2: 111. 1854.

Vegetative parts lacking. Inflorescence more than 30 cm. long, often bifurcating at the apex into 2 short racemes; peduncle slender, entirely invested by a series of close, imbricating, tubular sheaths; racemes short, densely many-flowered, suberect to pendent, up to 7 cm. long. Floral bracts very short, triangular. Flowers small, orange-yellow, with spreading segments, nearly 1.3 cm. across, rather fleshy. Sepals "oblong" or elliptic-lanceolate, acute, about 6 mm. long, the lateral ones probably oblique. Petals similar to the sepals, but a little narrower. Lip adnate to the column up to its apex, about as long as the sepals; lamina deeply 3-lobed, cordate at the base, retuse at the apex, about 5 mm. wide and somewhat shorter in the center; lateral lobes obliquely triangular-ovate, cuneate at the base, rounded in outline at the apex, lacerate-dentate except near the base; mid-lobe flabellate in outline, transverse, retuse or bilobed at the dentate apex, separated from the lateral lobes by a narrow sinus; disc at the base with a prominent, hippocrepiform, depressed callus which is crenate on the margin. Column about 3 mm. long, slightly dilated upward, with a 3-lobed, but not serrate, clinandrium.

Peru: Habitat not recorded, *Warscewicz s.n.*

This description is based on the original diagnosis, supplemented by a drawing of the species from the Reichenbach Herbarium.

Epidendrum gramineum Lindl. Gen. & Sp. Orch. 103. 1831; Fol. Orch. Epidendrum 88, no. 279. 1853; Kränzl. Engler Bot. Jahrb. 37: 525. 1906.

Plant rather slender, strict or slightly arcuate, sometimes exceeding 60 cm. in height. Stems simple or more commonly branched with ascending, short or elongate branches, entirely concealed by close, tubular, pustulose, leaf-bearing sheaths. Leaves linear or linear-lanceolate, up to 6.5 cm. long and about 4 mm. wide, apiculate at the obtuse or abruptly acute apex, clasping at the base, erect-ascending, coriaceous, with minutely cartilaginous-erose margins. Inflorescences terminal, arcuate or pendent, usually loosely paniculate (with few branches), sometimes racemose, very shortly peduncled, loosely few- to several-flowered, the rachis often fractiflex. Floral bracts minute, ovate, about equaling the pedicelled ovary. Flowers very small, fleshy, greenish suffused with red, with spreading or reflexed sepals and petals. Dorsal sepal ovate-oblong, subacute, up to 4.6 mm. long (according to Kränzlin, l.c., all flower parts are 6–7 mm. long). Lateral sepals similar but a little larger, acute, subcarinate at the apex. Petals linear to elliptic-linear, subacute or obtuse, rather shorter than the sepals. Lip adnate to the column up to its apex, about equaling the petals; lamina simple, ovate-cordate or cordate-triangular, concave, sharply acute or acuminate, a little shorter than the sepals, about 3 mm. long and somewhat wider; disc naked. Column very short and stout, clasped by the cordate auricles of the base of the lip, terminating on each side in a transversely oblong auricle.

Peru: Habitat not cited, *Pavón s.n.* (type).—Cuzco: *Herrera 2156, 2159, 2160* (Bues coll.).—Huánuco: Prov. of Huamalies, mountains southwest of Monzón, 3400–3500 meters, on cliffs, *Weberbauer 3328.*

Epidendrum grammatoglossum Reichb. f. Linnaea 22: 837. 1849; Lindl. Fol. Orch. Epidendrum 32, no. 97. 1853; Reichb. f. Walp. Ann. 6: 350. 1862.

Plant rather small, up to 26.5 cm. tall, epiphytic on trees or rocks, with a stout, creeping and sometimes branching rhizome. Pseudobulbs approximate to subremote, cylindric or narrowly ellipsoid to fusiform, bearing 2 (very rarely 3) leaves near the summit, mostly concealed by several imbricating, evanescent sheaths, 2.5–8 cm. long. Leaves linear-oblong or linear, obtuse or abruptly acute and shortly apiculate, clasping at the base, up to 17.6 cm. long, 5–11 mm. wide, subcoriaceous. Inflorescence terminal, racemose, shorter or longer than the leaves, loosely few- to many-flowered above the middle, up to 20.2 cm. long, the base of the peduncle clothed with a small, membranaceous, conduplicate spathe of variable length. Flowers small, fleshy, with spreading segments, yellow to green, the white lip often lined with purple. Dorsal sepal narrowly triangular-lanceolate, long-acuminate with a complicate apex, up to 9 mm. long. Lateral sepals obliquely triangular-lanceolate, long-acuminate, a little longer and broader than the dorsal sepal. Petals narrowly oblong-lanceolate, linear or elliptic-linear, acute or acuminate, distinctly shorter than the sepals. Lip adnate to the lower part of the column; lamina sharply 3-lobed, with a shortly and broadly cuneate base, 5.2 mm. or less long, and subequally wide below when expanded; lateral lobes erect and enfolding the column in natural position, round-ovate, more or less retrorse, subcordate to truncate at the base; mid-lobe porrect, triangular or linear-triangular, long-acuminate, sometimes very fleshy; disc with a pair of approximate, oblong calli or an oblong, concave, retuse callus between the lateral lobes. Column short, straight, prominently 3-toothed at the apex, 4 mm. or less long, the lateral teeth longer and the middle tooth with a thinner lamina in front of it.

Ayacucho: Aina, between Huanta and Río Apurimac, 750–1000 meters, in open woods, *Killip & Smith 22600.*—Cuzco: Prov. of Urubamba, 2250 meters, "Kil. 96, F.C.C. Sta. Ana" on rocks, *Vargas 5085.*—Junín: Chanchamayo Valley, 1500 meters, *Schunke s.n.* Same locality, 1200 meters, *Schunke 1305, 1336, 1639.* Also Venezuela (type), Colombia and Ecuador.

Epidendrum grandiflorum Lindl. Hook. Journ. Bot. 3: 86. 1841; Fol. Orch. Epidendrum 44, no. 135. 1853.

Plant large and stout, about 36 cm. or more tall. Stem entirely concealed by close, tubular leaf-sheaths, about 1 cm. wide. Leaves distichous, about 4 in number in the type, linear-oblong or elliptic-linear, obtuse, up to 21.3 cm. long and 2.3 cm. wide, deeply clasping, spreading. Inflorescence terminal, about 20 cm. long, lightly arcuate, racemose through the upper two thirds, the peduncle concealed by 2 prominent, oblong, scarious, conduplicate spathes; raceme subdensely many-flowered, with a more or less flexuous rachis. Floral bracts minute, setaceous from a broad base. Flowers large, coriaceous. Dorsal sepal elliptic-lanceolate ("oval"), acute, 1–1.5 cm. long. Lateral sepals equally long, but distinctly wider, very obliquely lanceolate-elliptic or semiorbicular. Petals linear, falcate, nearly as long as the sepals. Lip adnate to the column up to its apex; lamina oblate-suborbicular, somewhat broader than long, cordate at the base, retuse at the apex, with the posterior margins crisped; disc with 2 elevated veins or short keels at the base and with a thickened ridge through the middle. Column abbreviated, dilated toward the apex.

Peru: Habitat not recorded, *Mathews 1871.*

Description compiled from the cited diagnoses, supplemented by records from the Lindley Herbarium at Kew.

Since the completion of this enumeration, it has been pointed out by Mr. A. D. Hawkes, in Orquidea 18: 173. 1956, that this name is a homonym and he proposes for it the new name, *E. Sanderi.*

Epidendrum haematanthum Schltr. Fedde Repert. Beih. 9: 86. 1921; Mansf. Fedde Repert. Beih. 57: t. 118, nr. 464. 1929.

Plant tall, erect, up to 1 meter high, with an abbreviated rhizome. Stems altogether concealed by close, tubular sheaths which are leaf-bearing through the upper half. Leaves numerous, erect-spreading, oblong-ligulate, obtuse, up to 8.5 cm. long and 2.2 cm. wide, somewhat dilated toward the base. Inflorescence terminal, slender, up to 45 cm. tall, the slender peduncle provided with about 7 close, tubular sheaths, bearing at the summit an abbreviated, densely many-flowered raceme. Floral bracts linear-lanceolate, small. Flowers medium-sized, spreading, bright scarlet, smooth. Dorsal sepal elliptic-oblong ("oblong"), obtusely apiculate, about 1.3 cm. long. Lateral sepals similar, oblique. Petals obliquely lanceolate-elliptic, subacute, about as long as the sepals, with irregular margins. Lip adnate to the column up to its apex; lamina ovate-quadrate in outline, sharply 3-lobed, deeply cordate at the base, about 7 mm. long and almost 11 mm. wide near the base; lateral lobes obliquely semiovate, obtuse, denticulate except at the base; mid-lobe from a subquadrate claw abruptly dilated into a broadly reniform, bilobulate, apiculate apex, the rounded lobules being crenulate-dentate; disc provided in the center with a large, ovate, subobtuse callus and with a small callus on each side extending onto the middle of the lateral lobes. Column straight, a little dilated above, about 1 cm. long.

Cuzco: In the neighborhood of Tambo Cotani, on the road from Sandía to Chunchusmayo, 1500 meters, *Weberbauer 1286.*

No specimen of this species was available.

Epidendrum Haenkeanum Presl, Rel. Haenk. 1: 100. 1827; Lindl. Fol. Orch. Epidendrum 58, no. 179. 1853. *Epidendrum juninense* Schltr. Fedde Repert. Beih. 9: 87. 1921; Mansf. Fedde Repert. Beih. 57: t. 119, nr. 466. 1929.

Plant large, terrestrial or subterrestrial to epiphytic (often climbing), up to 13 dm. high, with an ascending rhizome up to 3 meters long. Stems simple or commonly branched with suberect or divaricate branches which often produce scattering, long fibrous roots, mostly concealed by close, tubular sheaths which are scarious and evanescent below and leaf-bearing in the upper portions. Leaves loosely distichous, 4–8 on the upper part of the branches, oblong-lanceolate or ovate-lanceolate (rarely elliptic-lanceolate), up to 13 cm. long and 3.5 cm. wide, narrowed to an acute or acuminate (often apiculate) apex, clasping at the base, widely spreading, subcoriaceous. Inflorescence terminal, loosely and laxly paniculate, with few divaricate branches, loosely few- to many-flowered, about 19 cm. or less long, the short peduncle often bearing a small inconspicuous spathe. Pedicelled ovary slender, elongate, much exceeding the triangular-lanceolate, acuminate floral bracts. Flowers medium-sized, subfleshy, greenish with white petals and lip, pinkish-yellow, greenish-yellow or rose-cream color, with spreading segments. Dorsal sepal oblong-spatulate or oblanceolate, acute with a dorsal mucro, 16–22 mm. long. Lateral sepals very obliquely oblong-spatulate or oblanceolate, sharply acute, with the prominent subapical keel extended into a mucro, a little longer and broader than the dorsal sepal, obliquely adnate to the column at the base. Petals spatulate-linear, oblique, obtuse to acute, nearly equaling the dorsal sepal. Lip adnate to the column up to its apex, slightly exceeding the sepals; lamina sharply 3-lobed, deeply cordate at the base, 5–10 mm. long in the middle, up to 16 mm. wide across the lateral lobes; lateral lobes suborbicular-oval, lightly reflexed in natural position, with the outer margins crenulate-denticulate; mid-lobe variable, quadrate to oblong-cuneate, retuse and bluntly apiculate with erose lobules; disc with a pair of complanate-rounded calli at the base enclosing a central fleshy-thickened line. Column long, slender, abruptly dilated near the apex in front, terminating in a pair of transversely subquadrate auricles, 12–18 mm. long at the back.

Peru: Habitat not recorded, in mountains, *Haenke s.n.* (type). —Cuzco: Paucartambo, "Pillahuata," 2900 meters, on wooded slopes, *Vargas 2053.* Prov. of Convención, "Alturas de Pintobamba," 2700 meters, epiphyte, *Vargas 3553.* Prov. of Urubamba, Tuncapata, 2800 meters, in humus of dense forest, *Vargas 2647.* Prov. of Urubamba, "Huiñaihuaina," 2550 meters, *Vargas 4116.*—Huánuco: Huacachi, near Muña, in "montaña," about 2000 meters, *Macbride 4105.* Prov. of Huánuco, Carpish, about 2850 meters, *Asplund 13129.* Between

Huánuco and Tingo María, at Km. 41, 2150 meters, climbing through small trees, *Seibert 2303*. Pampayaco (Pampayacu), *Sawada P. 37*. —Junín: Right lateral valley of Río Comas, 2700 meters, *Weberbauer 6611* (type of *E. juninense*).

Epidendrum Harmsianum Kränzl. Engler Bot. Jahrb. 54, Beibl. 117: 24. 1916.

Plant low, with a long-creeping rhizome. Pseudobulbs closely approximate and apparently in contact at the base, cylindric or ellipsoid-cylindric, obliquely appressed to the rhizome, up to 4.5 cm. long, diphyllous, provided with a triangular, evanescent sheath. Leaves elliptic-oblong to elliptic, broadly obtuse or retuse and minutely bilobulate at the apex, clasping at the base, up to 6 cm. long and 1.6 cm. wide, coriaceous. Inflorescence a little shorter than the leaves, up to 4 cm. long, 1- or rarely 2-flowered at the apex, with the peduncle partly concealed by a conspicuous, oblong, conduplicate spathe which is about 2.5 cm. long. Pedicellate ovary up to 2.5 cm. long, many times surpassing the minute bract. Flowers sulphur-yellow. Sepals oblong or elliptic-oblong, acute, about 1.6 cm. long, thickly fleshy, the lateral sepals lightly oblique. Petals narrowly oblanceolate, subacute, a little shorter than the sepals and much thinner in texture. Lip adnate to the column up to its apex; lamina when forcibly expanded transversely round-oval or "transversely ovate-oblong," abruptly short-apiculate in front, subcordate at the base, up to 8 mm. long and 13 mm. wide; disc with a pair of rather distant, small tubercles at the base. Column large, dilated upward from near the base, about 10 mm. long, the posterior margin of the clinandrium with a prominent, erect lobe.

Cajamarca: Prov. of Jaën (5° 10′–5° 20′ S. Br.), 2600–2900 meters, in sclerophyllous vegetation consisting of shrubs and scattering small trees, *Weberbauer 6134*.

Description made from an excellent photograph of the type specimen, supplemented by the original diagnosis.

Epidendrum Hartwegii Lindl. Benth. Pl. Hartweg. 150. 1844; Fol. Orch. Epidendrum 36, no. 113. 1853; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 228. 1944. *Epidendrum fuscum* Schltr. Fedde Repert. Beih. 9: 84. 1921; Mansf. Fedde Repert. Beih. 57: t. 118, nr. 463. 1929.

Plant epiphytic, commonly rather large, variable, up to 39 cm. high from the stout, creeping rhizome. Pseudobulbs more or less separated on the rhizome, fusiform to narrowly cylindric in the dried specimen, up to 17 cm. long, bearing 2 distinctly separated leaves near the summit, clothed below by 2 to 6 scarious, imbricating, evanescent sheaths. Leaves linear-oblong or ligulate to narrowly elliptic-oblong, obtuse to rounded at the apex, clasping below, up to 28 cm. long and 3.2 cm. wide (the Peruvian collections often much smaller), coriaceous, erect-spreading. Inflorescence terminal, subequaling or slightly exceeding the leaves, up to over 21 cm. long, erect to lightly arcuate, racemose above, the peduncle being enclosed at the base by a conduplicate, oblong, membranaceous, evanescent spathe which is 6.7 cm. or less long. Raceme loosely several- to many- (14-) flowered. Floral bracts minute, deltoid. Flowers rather small, fleshy, with spreading segments, yellowish, reddish-brown or purplish-brown tinged with yellowish-green, often with dark red or violet-purple petals. Dorsal sepal oblong-elliptic or oblong-ovate, obtuse or acute, up to 12.2 mm. long. Lateral sepals obliquely oblong-ovate, shortly acuminate, about equally long and broad with the dorsal sepal. Petals nearly as long as the sepals, variable, obovate-oblong to cuneate-spatulate, acute or apiculate. Lip adnate to the basal part of the column; lamina subequally 3-lobed, up to 6.6 mm. long (7 mm. in *E. fuscum*) and somewhat wider across the lateral lobes, cuneate at the base; lateral lobes suborbicular or rounded-subquadrate from a cuneate base; mid-lobe quadrate-ovate, abruptly and obtusely acute; disc mostly occupied in the center by an ovate-oblong, sulcate, puberulent callus. Column short and stout, straight, somewhat dilated upward, 3-toothed at the apex, up to 5 mm. long (6 mm. in *E. fuscum*).

Cajamarca: Eastern slopes of the Cordillera above Tabaconas, 2400 meters, *Weberbauer 6301* (type of *E. fuscum*).—Cuzco: "Pillahuata," Cerro de Cusilluyoc, 2200–2400 meters, in forest, *Pennell 13984*.—Huánuco: Yanano, about 1800 meters, *Macbride 3843*. Also Venezuela, Colombia and Ecuador (type of *E. Hartwegii*).

Epidendrum Herreranum C. Schweinf. Rev. Acad. Colomb. Ciénc. Exact. Físic. y Natur. 5: 350. 1943.

Plant epiphytic, stout. Primary stem or rhizome suberect to gently arcuate, entirely concealed by imbricating, scarious, evanescent sheaths, producing numerous appressed pseudobulbs which are 2–5 cm. distant at their base. Pseudobulbs slender-cylindric and closely rugose-striate in the dried specimen, up to 6 cm. long, monophyllous, concealed and surpassed by a loose, conduplicate, scarious sheath which is marcescent in age. Leaf nearly erect, elliptic-oblong to oblong, obtuse to subacute with a minute apicule, narrowed below, sessile, up to 12.5 cm. long and 2.2 cm. wide, coriaceous. Inflorescence solitary, 2- to 3-flowered near the apex, erect (recurved in course of development), provided at the base with a loose, scarious sheath, up to 7.5 cm. long. Floral bracts minute, triangular, concave. Flowers subapproximate, rather large, with the sepals brown-reddish and the petals and lip yellow. Dorsal sepal elliptic or ovate-elliptic, obtuse with a dorsal mucro, concave, about 20 mm. long. Lateral sepals similar to the dorsal sepal but slightly shorter and broader, oblique at the base. Petals rhombic-spatulate, lightly oblique, subacute, slightly shorter and broader than the lateral sepals. Lip adnate to the column up to its apex; lamina sharply 3-lobed, deeply cordate at the base, about 12 mm. long in the middle and 27.6 mm. wide across the expanded lateral lobes; lateral lobes obliquely rounded-dolabriform; mid-lobe obovate-flabellate in outline, broadly retuse in front, from a short subquadrate claw abruptly dilated into a pair of suborbicular-quadrate oblique lobules; disc at the base with a pair of complanate, semiorbicular calli. Column short, stout, very abruptly dilated above in front, terminating on each side in an oblique subquadrate auricle.

Cuzco: Prov. of Urubamba, Puyupatamarca area, 3200 meters, in dense forest, *Vargas 2755*.

This diagnosis is based in part on material of the type number received since the original description was written.

Epidendrum ibaguense (as *ybaguense*) HBK. Nov. Gen. & Sp. 1: 352. 1816; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 229. 1944. *Epidendrum radicans* Pav. ex Lindl. Gen. & Sp. Orch. 104. 1831. *Epidendrum decipiens* Lindl. Fol. Orch. Epidendrum 70, no. 221. 1853. *Epidendrum chrysostomum* Reichb. f. Allg. Gartenz. 24: 98. 1856. *Epidendrum laetum* Schltr. Fedde Repert. Beih. 6: 37. 1919; Mansf. Fedde Repert. Beih. 57: t. 5, nr. 19. 1929. *Epidendrum Baumannianum* Schltr. Fedde Repert. Beih. 7: 126. 1920; Mansf. Fedde Repert. Beih. 57: t. 44, nr. 169. 1929. *Epidendrum fraternum* Schltr. Fedde Repert. Beih. 7: 133. 1920; Mansf. Fedde Repert. Beih. 57: t. 47, nr. 180. 1929. *Epidendrum Smithii* Schltr. Fedde Repert. Beih. 7: 149. 1920; Mansf. Fedde Repert. Beih. 57: t. 53, nr. 203. 1929. *Epidendrum sororium* Schltr. Fedde Repert. Beih. 7: 150. 1920; Mansf. Fedde Repert. Beih. 57: t. 53, nr. 204. 1929. *Epidendrum huanucoense* Schltr. Fedde Repert. Beih. 9: 86. 1921; Mansf. Fedde Repert. Beih. 57: t. 118, nr. 465. 1929.

Plant exceedingly variable both vegetatively and florally, epiphytic or terrestrial, 15–150 cm. or more tall. Stems stout or slender, entirely concealed by close, tubular, imbricating sheaths which are leaf-bearing except near the base, often producing long white roots from the sides. Leaves distichous, commonly numerous, oblong, oblong-ovate, oblong-elliptic, oblong-lanceolate or oblong-oval, up to 12 cm. long and 4 cm. wide (commonly much smaller), obtuse or rounded (sometimes bilobulate) at the apex, deeply clasping below, more or less fleshy or coriaceous, sometimes minutely erose or denticulate. Inflorescence terminal, simple or more rarely few-branched above, up to 70 cm. long, shortly racemose at the apex, the elongate peduncle enveloped by numerous close, tubular, scarious sheaths. Racemes more or less abbreviated, usually densely few- to many-flowered. Pedicellate ovary far surpassing the more or less minute bracts. Flowers medium-sized, with spreading segments, orange-yellow through vermilion to dark red or rosy to purple or rarely white. Dorsal sepal oblong-elliptic or oblanceolate-elliptic, acute to subobtuse, 7–22 mm. long. Lateral sepals of similar size, oblique, lanceolate-elliptic (semielliptic) or oblong-oblanceolate, acute to subobtuse. Petals obliquely lanceolate-elliptic to very narrowly elliptic-oblong (rarely rhombic-lanceolate or rhombic-oblanceolate), nearly as long as the sepals, either narrower or broader than the sepals, entire or denticulate. Lip adnate to the column up to its apex; lamina deeply 3-lobed, cordate to subtruncate at the base, more or less retuse in front, 5–12 mm. long in the middle, 7.5–18 mm. wide near the base; lateral lobes rounded-dolabriform, semiorbicular or rarely broadly subquadrate, more or less incurved in front, with the margins irregularly crenate or dentate to lacerate-dentate; mid-lobe cuneate or oblong-cuneate (rarely cuneate-reniform) in outline, from a quadrate or subquadrate claw more or less dilated into a commonly bilobulate apex with rounded, dentate lobules; disc with a pair of small semielliptic or semiobovate complanate calli and a prominent more or less elongate central keel. Column dilated upward, 7–11 mm. long at the back, with a crenulate or crenate-dentate clinandrium.

Peru: Habitat uncertain, *Warscewicz* (type of *E. chrysostomum*).—Huánuco: Near Monzón, 1000–1500 meters, among open shrubs on the grass steppe, *Weberbauer 3463* (type of *E. huanucoense*). Also Mexico (type of *E. radicans*), Central America, the West Indies (Guadeloupe and Martinique), British Guiana, Venezuela (type of *E. laetum*), Colombia (type of *E. ibaguense, E. Baumannianum, E. decipiens, E. fraternum, E. Smithii* and *E. sororium*), Brazil and probably Ecuador and Bolivia, fide Schlechter, Fedde Repert. Beih. 8: 141. 1921, and 10: 72. 1922.

Epidendrum ibaguense HBK. var. **confluens** (Lindl.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 232. 1944. *Epidendrum fulgens* Brongn. Duperr. Voy. Coquille Bot. Phan. 196, t. 43. 1834; Cogn. Martius Fl. Bras. 3, pt. 5: 121. 1898. *Epidendrum Schomburgkii* Lindl. var. *confluens* Lindl. Fol. Orch. Epidendrum 70, no. 219. 1853. *Epidendrum calanthum* Reichb. f. & Warsc. Bonpl. 2: 111. 1854. *Epidendrum paytense* Reichb. f. Bonpl. 3: 220. 1855. *Epidendrum pristes* Reichb. f. Gard. Chron. n.s. 26: 262. 1886. *Epidendrum caucae* Schltr. Fedde Repert. Beih. 7: 127. 1920; Mansf. Fedde Repert. Beih. 57: t. 45, nr. 171. 1929. *Epidendrum Filomenoi* Schltr. Fedde Repert. Beih. 9: 83. 1921; Mansf. Fedde Repert. Beih. 57: t. 117, nr. 461. 1929.

Plant closely similar to *E. ibaguense*, but differs in having the mid-lobe of the lip sessile (without any distinct claw), and smaller than or subequal to the lateral lobes. Other differences found in constituent species are that the leaves reach a length of 15 cm., the mid-lobe of the lip is much smaller than the lateral lobes (*E. fulgens* Brongn.), the lobes of the mid-lobe are sometimes overlapping (*E. paytense* Reichb. f.) and the relatively small flowers have sepals 7 mm. long and column 5 mm. long (*E. Filomenoi* Schltr.).

Peru: Habitat not recorded, *Warscewicz s.n.* (type of *E. calanthum*).—Cuzco: Valle Marcapata, Camino Hacienda Cadena a Quincemil, about 1100 meters, *Scolnik 951, 952*.—Huánuco: Pampayaco (Pampayacu), Hacienda at mouth of Río Chinchao, about 1070 meters, *Macbride 5113*. Prov. of Huánuco, between Carpish and Tingo María, 2700 meters, evergreen woods, *Ferreyra 1233*.—Junín: Chanchamayo Valley, 1200 meters, *Schunke s.n.* Same locality, 1500 meters, *Schunke 1111*. Same locality, 1600 meters, *Schunke 1876, 2042*. Vitoc, 1000 meters *Soukup 2462*.—Loreto: Near Moyobamba, *Filomeno s.n.* (type of *E. Filomenoi*).—Piura: La Payta, *Warscewicz s.n.* (type of *E. paytense*).—Puno, fide Schlechter, Fedde Repert.

Beih. 9: 146. 1921, sub *E. calanthum.*—San Martín: Lamas, 840 meters, *Williams 6365.* Also Brazil (type of *E. fulgens*), Trinidad, Surinam, British Guiana and Colombia (type of *E. caucae*).

Epidendrum ibaguense HBK. var. **Schomburgkii** (Lindl.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 235. 1944. *Epidendrum Schomburgkii* Lindl. Bot. Reg. 24, Misc. 15, no. 16 & t. 53. 1838; Fol. Orch. Epidendrum 70, no. 219. 1853; Cogn. Martius Fl. Bras. 3, pt. 5: 120. 1898. *Epidendrum splendens* Schltr. Fedde Repert. Beih. 9: 93. 1921; Mansf. Fedde Repert. Beih. 57: t. 121, nr. 475. 1929.

The stems and leaves of this variety commonly larger than in the species, the leaves reaching 16 cm. in length and 5.6 cm. in width. Flowers usually distinctly larger than in the other forms of *E. ibaguense.* Sepals lanceolate or elliptic-lanceolate, acuminate, up to 3.5 cm. long. Petals similar or sometimes slightly exceeding the sepals. Lip commonly with a long-clawed mid-lobe which is prominently acute or apiculate.

Junín: Along Río Perene, near "Hacienda 3," Colonia Perene, about 600 meters, terrestrial in thickets, *Killip & Smith 25222.* La Merced, about 600 meters, *Macbride 5450.*—Loreto: Condorcanqui, Río Ucayali, near Río Maquia, *Seibert 1888.* Gamitanacocha, Río Mazán, 100–125 meters, on river-bank, *Schunke 66.* Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 681.* Manfinfa, on upper Río Nanay, *Williams 1155.* Valley of Río Marañon, San Isidro, near mouth of Río Pastaza, 150 meters, epiphyte in dense forest, *Killip & Smith 29181.* Vicinity of Iquitos, 100 meters, *Klug 10061.* Near Moyobamba, 1000 meters, on shrubs in savanna-woods, *Weberbauer 4544* (type of *E. splendens*). Also British Guiana (type of *E. Schomburgkii*), Surinam, Venezuela and Ecuador (fide Schlechter, Fedde Repert. Beih. 8: 140. 1921).

Epidendrum imatophyllum Lindl. Gen. & Sp. Orch. 106. 1831; Fol. Orch. Epidendrum 71, no. 222. 1853; Cogn. Martius Fl. Bras. 3, pt. 5: 123. 1898.

Plant variable, more or less robust, epiphytic, up to 7 meters high with a creeping, stout, branched rhizome. Stem simple, entirely or mostly concealed by close, tubular sheaths which are scarious and soon waste into fibers below and are leaf-bearing above. Leaves numerous, distichous, linear-oblong to elliptic-linear (rarely linear-lanceolate or elliptic-oblong), up to 18.7 cm. long and 2.4 (rarely 3.1) cm. wide, obtuse to rounded or rarely emarginate at the tip, clasping below, thickly coriaceous, erect-spreading. Inflorescence terminal, exceeding the leaves, more or less elongate, racemose at the apex (sometimes with one or more short lateral racemes), the peduncle more or less concealed by several commonly elongate, close, tubular sheaths; raceme short, usually densely many-flowered, rarely up to 16 cm.

long, erect or recurved. Floral bracts triangular, long-acuminate, much exceeded by the pedicelled ovary. Flowers medium-sized, pink or rose-purple to carmine, membranaceous, with spreading segments. Dorsal sepal oblong-oblanceolate or elliptic-oblanceolate, sharply acute or acuminate, 1.1–2 cm. long. Lateral sepals about equaling the dorsal sepal, obliquely semielliptic or elliptic-lanceolate (rarely oblong-oblanceolate), acuminate. Petals lanceolate-elliptic or rhombic-lanceolate (often broadest above the middle), acute or acuminate, a little longer and distinctly broader than the sepals (often much so), with the margins often irregular or lobulate. Lip adnate to the column up to its apex, somewhat shorter than the other segments; lamina round-oval or broadly subquadrate-ovate in outline, cordate at the base, more or less distinctly 3-lobed, up to 8 mm. long in the middle and subequally wide near the base; lateral lobes dwarf, laciniate; mid-lobe subrounded or obovate, subtruncate and abruptly mucronate in front, crenulate to sharp-dentate on the sides; disc with a pair of small complanate calli at the base and a median, more or less elongate keel. Column gradually dilated upward, more or less sigmoid when viewed from the side, 3-toothed at the apex, about 1 cm. or less long.

Huánuco: Prov. of Huánuco, Tingo María, in forest, *Asplund 12477*. Six kilometers south of Tingo María, in moist valley near highway, about 730 meters, *Seibert 2256*.—Loreto: Gamitanacocha, Río Mazán, 100–125 meters, on river-bank, *Schunke 44*. Along Río Itaya ("Río Mazán"), *Williams 169*. Maquisapa, on the upper Río Nanay, *Williams 1213*. Mishuyacu, near Iquitos, 100 meters, epiphyte in forest, *Klug 1305*. Valley of the upper Marañon River near the mouth of the Santiago River, on river-bank, *Tessmann 4879*.—San Martín: Juan Juí, Alto Río Huallaga, 400–800 meters, epiphyte on river-bank in forest, *Klug 4301*. Zepelacio, near Moyobamba, about 1100 meters, epiphyte in mountain forest, *Klug 3669*. A variable species extending from Mexico through Central America to Panama and in South America from Trinidad through the Guianas (type), Venezuela, Colombia and Peru to Brazil.

Epidendrum inamoenum Kränzl. Engler Bot. Jahrb. 37: 525. 1906.

Plant robust, 15 cm.–1 meter in height, with an abbreviated rhizome. Stems approximate, stout, with a more or less decumbent base, apparently simple, entirely concealed by tubular, leaf-bearing sheaths. Leaves numerous, distichous, lanceolate-oblong to (rarely) ovate-oblong, up to 8 cm. long and 1.7 cm. wide, broadly obtuse to rounded (rarely bilobulate) at the apex, clasping at the base, coriaceous, rigidly ascending. Inflorescence terminal, racemose, abbreviated, densely few- (up to 14-) flowered, erect or more commonly nodding, with the rachis about 3.5 cm. or less long. Flowers rather small, green turning brown, or wine-red, fleshy. Dorsal sepal "oblong" or elliptic, up to 11 mm. long, acute. Lateral sepals obliquely ovate-elliptic, acute, dorsally more or less carinate, a little longer than the dorsal sepal. Petals oblanceolate or elliptic ("oblong"), acute, nearly as long as the dorsal sepal. Lip adnate to the column nearly to its apex; lamina broadly ovate in outline, transverse, lightly 3-lobed above, subcordate at the base, obtusely rounded at the apex, up to about 7.7 mm. long in the middle and 10.5 mm. wide near the base; disc with a pair of fleshy keels merging into a fleshy thickening in front. Column short, very stout, dilated upward, terminating on each side in a fleshy subquadrate auricle, up to 7 mm. long including the auricle.

Apurimac: Prov. of Andahuaylas, ravine north of Chincheros, 2800 meters, on shrubby hillside in mixture of clay and gravel, *Stork & Horton 10756.*—Junín: Prov. of Tarma, mountains east of Talca, 2700–3000 meters, on grassy plains with scattering shrubs, *Weberbauer 2456* (type).—Puno: Prov. of Carabaya, "Ollachea a Pte. Ackapampa," 3200–3450 meters, on cliffs, *Vargas 6992.*

Epidendrum inamoenum Kränzl. var. **robustum** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 11. 1953.

Plant differs from the species in being about twice as large throughout. Stems up to 2 meters high. Leaves oblong to oblong-elliptic, up to 15 cm. long and 3 cm. wide. Flowers pale yellow or greenish yellow, much larger than those of the type, the sepals being about 17 mm. or more long. Lamina of the lip suborbicular-ovate, simple to distinctly 3-lobed above, about 12–14 mm. long in the middle and 15–17 mm. wide.

Cuzco: Prov. of Urubamba, "Kil. 97–108, F.C.C.S.A.," 2200 meters, on rocky slope, *Vargas 3408* (type). Machu-Picchu, 2040 meters, on rocky slope, *Vargas 5551* (showing several suberect branches).

Epidendrum incisum Reichb. f. & Warsc. Bonpl. 2: 112. 1854.

Species described only from the terminal portion of an inflorescence. Peduncle entirely or mostly concealed by rather long, close, tubular sheaths, with 1 or more short floriferous branches. Racemes densely many-flowered. Flowers small, chartaceous, scarlet. Sepals and petals oblong-elliptic to oblong-oblanceolate ("oblong"), about 1.2 cm. long, apiculate. Lip entirely adnate to the column; lamina rounded in outline; lateral lobes rounded-dolabriform, dentate on the outer margins; midlobe transversely oval-reniform, bilobed with a triangular sinus; disc through the base with an oblong, lobulate callus, which is extended toward the apex into a keel. Column dilated above, with dentate auricles on each side at the apex.

This concept appears to be insufficiently distinct to place in a key, and seems, perhaps, to be referable to *E. xanthinum* Lindl.

I have examined a drawing with a floral analysis, from the Reichenbach Herbarium.

Since the completion of this enumeration, it has been pointed out by Mr. A. D. Hawkes, in Orquidea 18: 168. 1956, that this name is a homonym, and he proposes for it the new name, *E. Bulkeleyi.*

Epidendrum laceratum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 143, t. 43. 1952. Figure 85.

Plant dwarf, epiphytic, about 4.5 cm. high. Stems slender, simple or somewhat branched near the base, lightly flexuous, entirely concealed by loose, tubular sheaths which (except the lowermost) are leaf-bearing. Leaves distichous, ascending or spreading, linear, rounded at the apex with a more or less distinct apicule, sessile and clasping at the base, up to 2.1 cm. long and 2.5 mm. wide on the upper portion of the plant. Inflorescence sessile or subsessile, umbelliform, erect, with about 5 or less congested flowers. Flowers small, white, with the pedicellate ovary bialate. Dorsal sepal linear-lanceolate, abruptly acute, about 5.5 mm. long. Lateral sepals obliquely oblong-lanceolate, complicate and mucronate at the apex, dorsally carinate, a little longer and broader than the dorsal sepal. Petals elliptic-linear, obtuse, slightly oblique, distinctly shorter than the dorsal sepal but equally wide. Lip adnate to the column up to its apex; lamina broadly ovate in outline, abruptly concave in the middle of the base, the lower two thirds on each side prominently and irregularly lacerate-dentate and the anterior third triangular-ovate, entire and obtuse, lightly cordate at the base, about 4.8 mm. long and equally wide when expanded. Column short, straight, with two teeth on each side, about 2.7 mm. long.

Cuzco: Prov. of Paucartambo, Sta. Isabel to Asunción, 1800 meters, epiphyte, *Vargas 5583.*

Epidendrum lanipes Lindl. Fol. Orch. Epidendrum 91, no. 291. 1853; Kränzl. Engler Bot. Jahrb. 26: 465. 1899.

Plant rather large, epiphytic. Stems approximate, fusiform or fusiform-cylindric, with a somewhat decumbent base, up to 75 cm. tall, many-jointed, mostly concealed by tubular sheaths which are scarious and evanescent below and leaf-bearing above. Leaves distichous, on the upper part of the stem, ligulate or narrowly oblong-lanceolate, up to 25 cm. long and 2.6 cm. wide, obtuse and often minutely bilobulate at the apex, clasping at the base, coriaceous, ascending. Inflorescence terminal, paniculate, with few to several distichous, remote, divaricate branches, up to 28 cm. in length along the main rachis and nearly as wide, finely pubescent throughout, the branches being loosely many-flowered. Floral bracts minute, deltoid. Flowers small, yellow, or brownish yellow with yellowish white lip, the entire outer surface of the sepals (and pedicelled ovary) finely pubescent. Dorsal sepal narrowly oblong-oblanceolate, about 8.5 mm. long, obtuse or subacute, dorsally umbonate at the apex. Lateral sepals semiobovate or obliquely obovate-oblong, a little longer and markedly broader than the dorsal sepal. Petals linear or oblanceolate-linear, a little shorter than the dorsal sepal. Lip adnate to the column up to its apex, much surpassing the sepals; lamina sharply 3-lobed, cordate at the base, lightly retuse in front, about 5.3 mm. long in the center and 8 mm. wide across the expanded lateral lobes; lateral lobes semiovate or rounded-dolabriform; mid-lobe larger, porrect, cuneate-oblong, dilated above with a retuse and apiculate apex; disc with a pair of complanate-rounded calli at the base and 3 short keels in front of them. Column relatively large, dilated upward, terminating in a pair of very oblique, transverse, bilobed auricles, about 6 mm. long at the back.

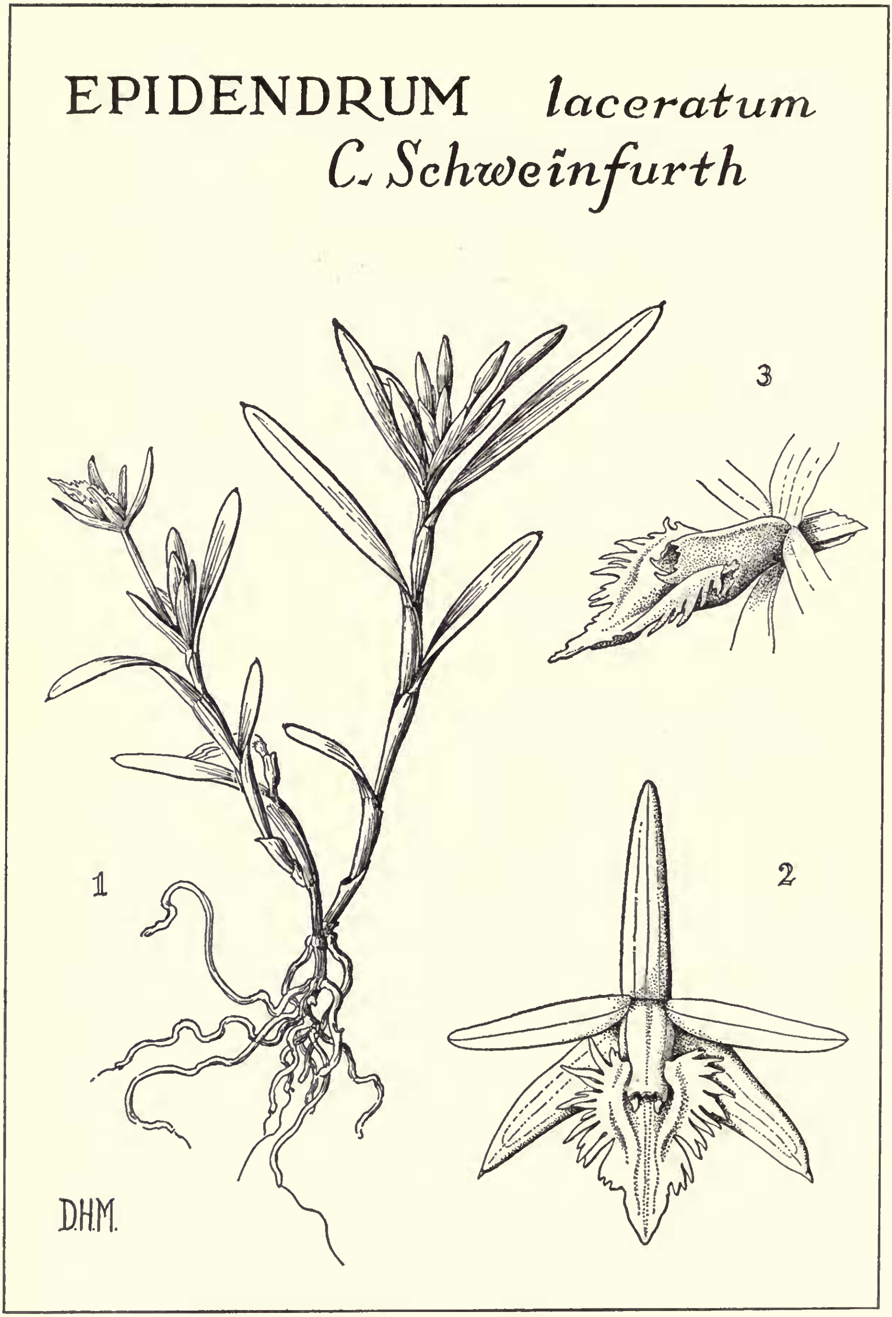

EPIDENDRUM laceratum
C. Schweinfurth
3
1
2
D.H.M.

Fig. 85. *Epidendrum laceratum* C. Schweinf. 1, plant; × 2. 2, flower, expanded; × 5. 3, column and lip, three quarters view; × 5.

Amazonas: Chachapoyas, *Mathews 3183* (type). Also Colombia and Bolivia.

Epidendrum latisegmentum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 91, t. 6, figs. 7–11. 1943. Figure 80.

Plant epiphytic, rather large and straggling. Stem elongate, laxly arcuate, with scattered strict or appressed branches, apparently wholly concealed by tubular sheaths which are scarious and evanescent below and leaf-bearing above. Leaves distichous, few (about 4) confined to the upper portion of the stem or branches, elliptic-lanceolate or elliptic-oblong, acuminate, cuneate at the clasping base, widely spreading, up to 17 cm. or more long (the longest blade incomplete above) and 3 cm. wide, the lower blades successively much smaller and subremote, submembranaceous. Inflorescence terminal, racemose, apparently 5-flowered (broken in the specimen at hand), subtended by a small, erect, conduplicate spathe. Flowers large, yellow-green. Dorsal sepal oval-obovate, subacute, about 19 mm. long and 13 mm. wide. Lateral sepals obliquely obovate-oval, acute, a little larger than the dorsal sepal. Petals cuneate-spatulate, obtuse or subacute, about as long as the dorsal sepal, but a little narrower. Lip adnate to the column up to its apex; lamina simple, obovate-reniform, with the truncate anterior margin lightly retuse, about 16.5 mm. long and 25 mm. wide; disc fleshy, densely cellular-papillose on both surfaces, remotely bicallose at the base. Column abbreviated, very stout, dilated upward.

Loreto: Pumayacu, between Balsapuerto and Moyobamba, 600–1200 meters, in forest, *Klug 0.9.*

Epidendrum Lechleri Reichb. f. Linnaea 41: 38. 1876.

Plant medium-sized. Stems 20 cm. or more tall, bifurcate above, entirely concealed by loose, tubular or infundibuliform, imbricating sheaths which are leaf-bearing above. Leaves distichous, about 4 to a branch, mostly "ligulate" or oblong-lanceolate (the lower ones ovate-lanceolate), acute, clasping at the base, up to about 6.5 cm. long and 1.1 cm. wide. Inflorescence terminal, porrect or reflexed above the peduncle, about 7.5 cm. or more long, with an ancipitous peduncle. Raceme rather loosely several-flowered. Floral bracts triangular-lanceolate, acuminate, equaling the pedicellate ovary. Flowers medium-sized, very coriaceous, with spreading segments. Sepals about 13 mm. long, "ligulate" or oblong-lanceolate, subacute. Petals linear-cuneate, acute. Lip probably strongly adnate to the column; lamina 3-lobed; lateral lobes large, rounded; midlobe small, dentiform; disc with a pair of obtuse calli at the base and 3 fleshy ridges in front of these. Column nearly straight.

"Jabine Peruviae," *Lechler 2546* (type). Puno, fide Schlechter, Fedde Repert. Beih. 9: 149. 1921.

This description was compiled from a drawing of a specimen, supposedly the type, in the Reichenbach Herbarium combined with the diagnosis of the type. In the latter the number was given as "*Lechler 2540* (forsan et *2544*)," whereas the drawing is recorded as *Lechler 2546.*

Epidendrum liguliferum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 92, t. 8, figs. 4–5. 1943. Figure 86.

Plant tall. Stem lax, lightly flexuous or fractiflex above, sometimes with a single elongate branch, up to more than 60 cm. tall, mostly concealed by tubular sheaths which are close, scarious and evanescent below, and approximate, looser and leaf-bearing above. Leaves loose, distichous, numerous, lanceolate or elliptic-lanceolate (rarely oblong-lanceolate), minutely erose at the acute or acuminate apex, amplexicaul at the base, up to 12.5 cm. long and 2 cm. wide (the lower blades much smaller), subcoriaceous. Inflorescence terminal, arcuate, loosely several-flowered above, about 13 cm. or more long; peduncle about 4.2 cm. long, provided with a small spathe having an oblong-lanceolate free portion. Floral bracts conspicuous, narrowly triangular-lanceolate, shorter than the pedicelled ovary. Flowers medium-sized, greenish-white, with spreading or reflexed segments. Dorsal sepal obovate-oblong, acute, about 16.7 mm. long. Lateral sepals very obliquely oblong-obovate, sharply acute, dorsally carinate above, somewhat shorter than the dorsal sepal but equally wide or wider. Petals linear-spatulate, obtuse, nearly as long as the dorsal sepal. Lip adnate to the column up to its apex; lamina convex in natural position, subquadrate-reniform when expanded, subcordate at the base, shallowly 3-lobed at the truncate apex, about 8.9 mm. long in the middle and 17.9 mm. wide; lateral lobes semiorbicular or rounded-dolabriform with the outer margins irregular; mid-lobe transversely oblong or reniform, shallowly retuse; disc with a pair of conspicuous basal, spreading, free, ligulate calli and a fleshy-thickened median line. Column conspicuous, abruptly much dilated in front above, terminating in a pair of obliquely subquadrate auricles, about 12 mm. in greatest length.

Huánuco: Cani, 7 miles northeast of Mito, about 2600 meters, "floor of dense stream-wood," *Macbride 3543.*

Epidendrum Lima Lindl. Fol. Orch. Epidendrum 67, no. 210. 1853; Kränzl. Engler Bot. Jahrb. 26: 476. 1899.

Plant stout, medium-sized. Stems up to 3 meters high, more or less branched opposite the leaf-articulations, entirely concealed by close, tubular, verrucose sheaths which are leaf-bearing except at the base of the branches. Leaves numerous, distichous, elliptic-oblong to lanceolate-elliptic (rarely narrowly lanceolate to oval and much smaller at the base of the branches), up to 12 cm. long and 3 cm. wide, acute (often abruptly so), clasping at the base, spreading, thinly coriaceous. Inflorescence racemose or paniculate, subequaling or slightly exceeding the leaves, loosely several- to many-flowered, lax and diffuse. Pedicelled ovaries much exceeding the linear-lanceolate bracts. Flowers medium-sized, subfleshy, olive-green, with spreading segments. Dorsal sepal linear-oblanceolate, acute, about 1.85 cm. or less long. Lateral sepals obliquely and narrowly oblong-oblanceolate, acute with a more or less prominent dorsal, subapical mucro, about as long as the dorsal sepal but broader, very obliquely adnate to the column at the base. Petals spatulate-linear, nearly as long as the sepals. Lip adnate to the column up to its apex, slightly surpassing the sepals; lamina convex in natural position, commonly distinctly 3-lobed, cordate at the base, about 8 mm. long in the middle and slightly broader across the lateral lobes; lateral lobes obliquely ovate-rounded, with irregular or lobulate margins; mid-lobe much larger, cuneate

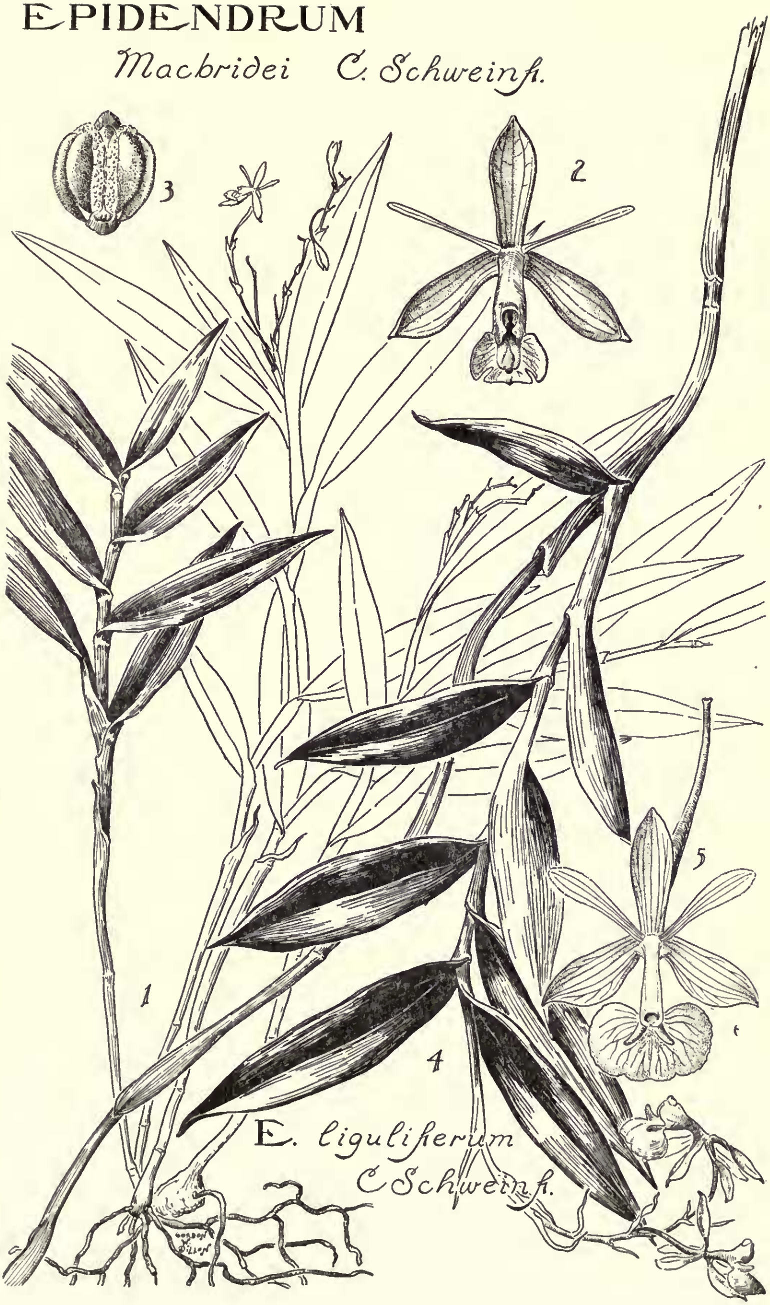

EPIDENDRUM
Macbridei C. Schweinf.
3
2
1
4
5
E. liguliferum
C Schweinf.
Gordon Dillon

FIG. 86. *Epidendrum Macbridei* C. Schweinf. 1, plant; × ½. 2, flower, expanded; × 2. 3, pollinia *in situ;* × 10. *E. liguliferum* C. Schweinf. 4, plant; × ½. 5, flower, expanded; × 1.

to cuneate-subquadrate, shallowly retuse and bluntly apiculate; disc with 2 basal, prominent flattened calli and 3 more or less prominent thickened lines in front of these. Column long, slender, dilated above in front, 1.3 cm. or less long, terminating in a pair of transversely oblong, retuse auricles.

Junín, ex Kränzlin, fide Schlechter, Fedde Repert. Beih. 9: 149. 1921. Ecuador (type).

This description was drawn from an Ecuadorian collection (*Lehmann 6730*) cited by Kränzlin as representing *E. Lima*, as well as from two other Ecuadorian collections of this species and a photographic record with floral analysis of the type from the Lindley Herbarium.

Epidendrum lineare Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 249. 1798.

Huánuco: Chinchao and Muña, in open woods.—Junín: Huassahuassi, on trees and rocks, *Pavón s.n.*

Judging from a photograph of the supposed type in the Ruíz & Pavón Herbarium at Madrid, this species closely resembles the Middle American *E. luteoroseum* A. Rich. & Gal., but the details of the flower are obscure.

The concept *Coilostylis obtusifolia* Rafin. (Fl. Tellur. 4: 37. 1836), which has been referred to *E. lineare* as a synonym by Schlechter (Fedde Repert. Beih. 9: 149. 1921), is also too indefinite to place.

Epidendrum longirepens (Schweinf.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 12. 1953. *Epidendrum Schlechterianum* Ames var. *longirepens* C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 115. 1943.

Plant small, with a long-creeping, flexuous rhizome consisting of short connectives between the abbreviated stems, producing numerous adventitious roots. Stems very short, about 5.8 mm. long, wholly concealed by loose, flaring, unjointed and imbricating leaf-sheaths. Leaves very small, distichous, approximate, spreading-recurved, oblong-ovate, up to 7.5 mm. long and 4.4 mm. wide when expanded, rounded at the apex with a minutely bilobulate and mucronate tip, apparently very fleshy when fresh. Flowers apparently solitary, sessile, green-rose, rather small. Dorsal sepal elliptic-lanceolate or ovate-lanceolate, obtuse or subacute and apiculate, about 8.9 mm. long, dorsally carinate. Lateral sepals similar, acute and apiculate, oblique at the base with the center adnate to the column, slightly narrower than the dorsal sepal, with a prominent, dorsal, winged keel which is denticulate above. Petals oblong or elliptic-oblong, acute, markedly shorter than the sepals but equally wide with the lateral sepals. Lip adnate to the column nearly to its apex; lamina cordate-suborbicular or broadly ovate-cordate, rounded and abruptly mucronate in front, about 5 mm. long and 5.9 mm.

wide, fleshy, with finely denticulate margins. Column abbreviated, terminating on each side in a prominent, oblique, rounded-subquadrate auricle, denticulate on the retuse middle portion, about 3.9 mm. long to the tip of a lateral auricle.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 1274*.

Epidendrum Macbridei C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 94, t. 8, figs. 1–3. 1943. Figure 86.

Plant epiphytic, rather small and delicate, about 29 cm. or less high, from a shortly creeping rhizome. Stems slender, approximate, spreading, more or less flexuous, entirely concealed by tubular sheaths which are evanescent on the lower part and leaf-bearing above, about 20.5 cm. or less long. Leaves distichous, 7–10, elliptic-lanceolate (rarely elliptic-linear), acuminate, cuneate at the clasping base, up to 10.3 cm. long and 1.75 cm. wide (the uppermost and lower blades much smaller), spreading, submembranaceous. Inflorescence a short, virgate, few-branched panicle which is sheathed below and is surpassed by the leaves, with the branches very loosely 7-flowered or less. Flowers small, subfleshy, greenish-white, with spreading segments. Dorsal sepal oblong-oblanceolate, subacute, concave, about 8.5 mm. long. Lateral sepals obliquely oblong-oblanceolate, acute and mucronate, a little larger throughout than the dorsal sepal. Petals filiform, slightly broader above, a little shorter than the dorsal sepal. Lip adnate to the column up to its apex; lamina small, flabellate-subquadrate in outline, cordate at the base, 3-lobed in front, about 3 mm. in greatest length and 5 mm. wide across the lateral lobes; lateral lobes obliquely ovate-dolabriform with the outer margins lightly emarginate near the base; mid-lobe smaller than the lateral lobes and not exceeding them in front, transversely oblong from a cuneate base, broadly truncate in front with a small triangular apicule in the middle; disc occupied throughout the center by a large, fleshy, oblong-ovate, 3-lobulate, bisulcate callus. Column much dilated above in front, terminating in a subquadrate bilobed auricle on each side, about 4 mm. long at the back.

Huánuco: Pampayaco (Pampayacu), hacienda at the mouth of Río Chinchao, about 1070 meters, *Macbride 5081*.

Epidendrum macrocyphum Kränzl. Fedde Repert. 1: 185. 1905.

Plant variable, stout or slender, up to 1 meter high, with an abbreviated rhizome bearing stout, fibrous roots. Stems approximate, commonly decumbent at the very base, entirely concealed by tubular sheaths which are scarious and evanescent at the base and leaf-bearing above. Leaves distichous, 3–11 in number, more or less dense, ovate-oblong to lanceolate-oblong or elliptic-oblong, obtuse to rounded (rarely subacute) at the apex, clasping at the base, up to 6.6 cm. long and 2.4 cm. wide, coriaceous to thickly fleshy. Inflorescence terminal, with an elongate peduncle which is concealed by numerous close, scarious, evanescent, tubular sheaths; raceme densely or subdensely many-flowered, more or less arcuate, the rachis up to 12.5 cm. long, sometimes with 1 or 2 appressed branches. Floral bracts very small, triangular, long-acuminate, much shorter than the elongate pedicelled ovaries. Flowers medium-sized, with spreading segments, purple or reddish-purple, sometimes with white at the base of the lip. Dorsal sepal oblong-elliptic, acute, about 8–11.5 mm. long. Lateral sepals very obliquely elliptic-oblong or broadly oblong, acute, somewhat longer and broader than the dorsal sepal. Petals oblong-obovate, abruptly acute, shorter than the dorsal sepal. Lip adnate to the column up to its apex, distinctly exceeding the rest of the perianth, about 19 mm. or less in greatest length; lamina sharply 3-lobed, about 9 mm. or less long in the middle; lateral lobes obliquely subquadrate-dolabriform to obliquely semiovate with the subcordate posterior margin and the straight anterior margin entire and the outer margins irregularly lacerate-dentate to crenate-serrate; mid-lobe more than twice as large, obovate in outline, from a cuneate base dilated into a pair of divaricate, rounded, dentate lobules separated in front by a V-shaped sinus; disc with a pair of basal calli which are prolonged into lobulate keels, and a central higher keel extended toward the apical sinus. Column stout, somewhat dilated upward, about 4 mm. long at the back, with a denticulate or dentate clinandrium.

Cajamarca: Prov. of Hualgayoc, near Santa Cruz, 2000–2200 meters, in open habitat of shrubs mingled with herbs, bromeliads, grasses and numerous cacti, *Weberbauer 4119* (type).—Huánuco: Between Huánuco and Pampayaco (Pampayacu), *Kanehira 316* (a large plant both vegetatively and florally). Fifteen miles northeast of Huánuco, about 3000 meters, in shady gullies among brush, *Macbride & Featherstone 2147*. Mito, about 2700 meters, hanging from rock cliff, *Macbride 3329*.

Epidendrum macrogastrium Kränzl. Fedde Repert. 1: 187. 1905.

Plant with a long-creeping, rooting rhizome. Stems 2–3 cm. distant, mostly concealed by 2 loose, pale sheaths, 1- to very rarely 2-leafed above. Leaves lanceolate or oblong, subacute, up to 10 cm. long and 1 cm. wide, rather thickly coriaceous. Peduncles subequaling the leaf, adorned a little above the base with a short sheath. Racemes congested, more or less subumbellate, few-flowered. Floral bracts minute, far shorter than the elongate, twisted, pedicelled ovary. Flowers yellow. Dorsal sepal oblong, acute, 1.2 cm. long. Lateral sepals similar, more or less oblique. Petals narrowly linear, obtuse, subequally long with the sepals. Lip adnate to the column up to its apex and forming with it an equally long, broad sac, about 1.5 cm. long including the column; lamina simple, very broadly cordate, concave-conduplicate, apiculate at the obtuse apex, about 1.5 cm. wide when expanded; disc with 2 minute calli at the base and a thickened median line. Column straight, with the lateral lobes of the clinandrium terminating in a minute auricular appendage.

Cajamarca: Prov. of Chota, 2700–2900 meters, mountains west of Huambos, in sclerophyllous vegetation (chiefly shrubs and small trees), *Weberbauer 4181*.

This description was translated from the original diagnosis.

Epidendrum macropodum Reichb. f. Bonpl. 4: 327. 1856. An obscure concept, perhaps referable to *E. xanthinum* Lindl.

Stem (incomplete below) entirely invested by tubular, leaf-bearing sheaths. Leaves distichous, 4 or more, oblong to elliptic-oblong, about 8.7 cm. or less long, up to 2 cm. wide, obtuse or "subacute," clasping below. Inflorescence terminal, the erect peduncle entirely concealed by several elongate, close, tubular sheaths and bearing at the summit 2 arcuate, sublaxly several-flowered racemes. Floral bracts triangular, very short, with the lower ones longer. Pedicelled ovary slender, about 2 cm. long. Perianth small, with spreading segments. Sepals not described; the lateral ones appear to be obliquely elliptic-oblanceolate and about 8 mm. long. Petals "spatulate" or oblong-spatulate, acute. Lip adnate to the column up to its apex, longer than the rest of the flower; lamina sharply 3-lobed, subquadrate in outline; lateral lobes small, flabellate-rounded or "semiovate," dentate-lacerate; mid-lobe more than twice as large, flabellate or flabellate-reniform, abruptly dilated into a pair of divergent, quadrate-rounded lobules which are sharply dentate on the outer margin; disc with a large central round-ovate callus which is sharply dentate on each side, with a keel in the forward portion.

Peru(?): Habitat not recorded, *Jameson s.n.*

The above description, based on a photograph of a specimen, presumably the type, from the valley of Lloa, western side of Pichincha, supplemented by the type diagnosis, is included only for the sake of completeness.

Epidendrum maculatum Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 243. 1798.

Junín: Huassa-huassi and Palca, in steep rocky places and very low hot places, *Pavón s.n.*

This species is obscure.

Since the completion of this enumeration, it has been pointed out by Mr. A. D. Hawkes, in Orquidea 18: 173. 1956, that this name is a homonym, and he proposes for it the new name, *E. Teuscherianum.*

Epidendrum magnicallosum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 96, t. 9, figs. 1–3. 1943. Figure 87.

Plant epiphytic, very variable vegetatively, with an abbreviated creeping rhizome. Stems approximate, slender, up to 16.3 cm. high, gradually slightly dilated upward, entirely concealed by several close, tubular, imbricating sheaths which are evanescent in the course of development, monophyllous at the apex. Leaf lanceolate-linear, acuminate, narrowed to a clasping base, about 20.5 cm. or less long (incomplete in the type), up to 1.2 cm. wide, rigidly suberect, coriaceous. Inflorescence terminal, elongate, slender, entirely concealed by close, tubular, evanescent sheaths, up to 30.4 cm. long (incomplete in specimen seen), remotely provided on the upper portion with several short, strict, few-flowered branches or clusters of branches (as in *E. anceps* Jacq.). Flowers small, cream-colored or white and lilac, rather fleshy. Dorsal sepal ovate-oval, abruptly acute, about 8.5 mm. or less long. Lateral sepals similar but somewhat smaller, obliquely ovate-oval, acute. Petals cuneate-obovate or cuneate-spatulate, rounded to acute at the apex, as long

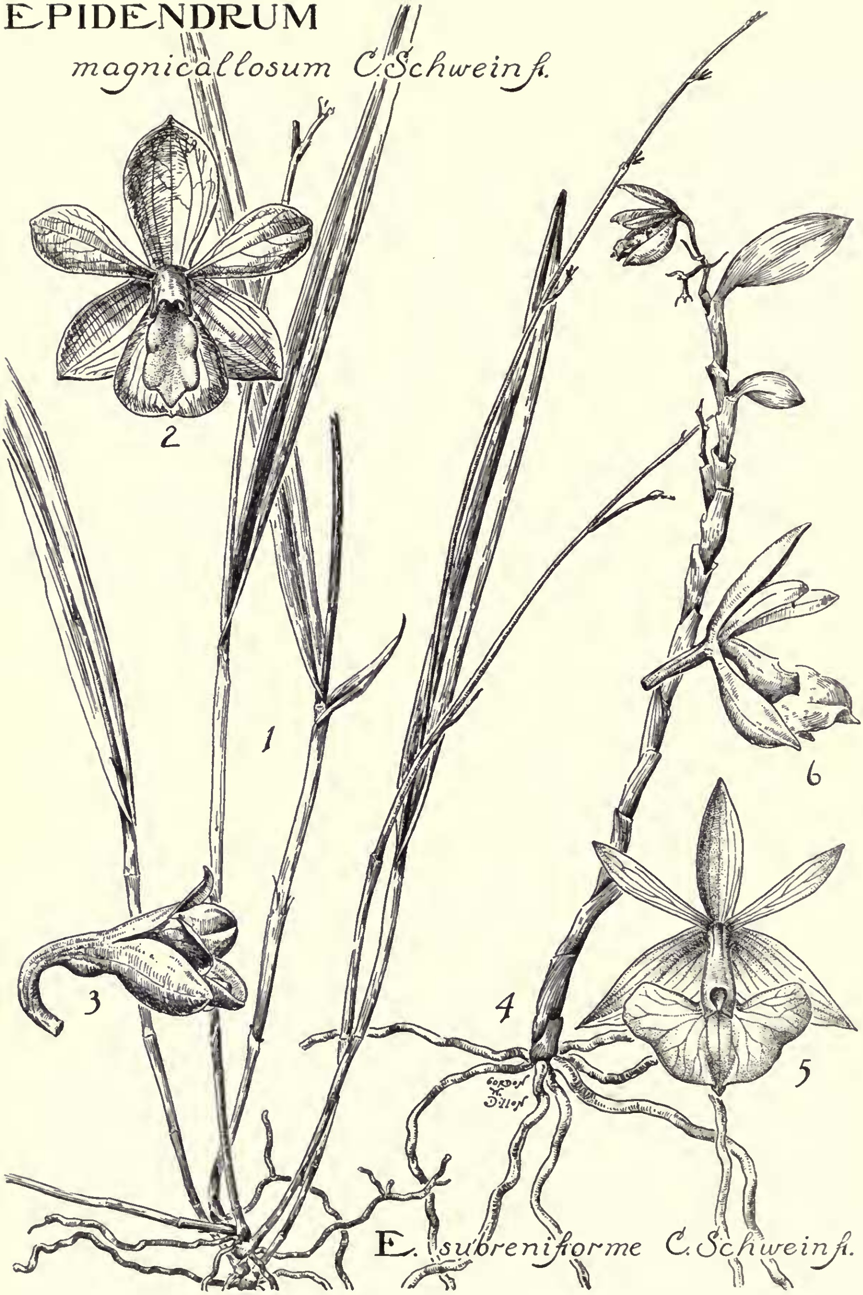

EPIDENDRUM
magnicallosum C.Schweinf.
2
1
6
3
4
5
Gordon W. Dillon
E. subreniforme C.Schweinf.

FIG. 87. *Epidendrum magnicallosum* C. Schweinf. 1, plant; × ½. 2, flower, expanded; × 2½. 3, flower from side, natural position; × 2½. *E. subreniforme* C. Schweinf. 4, plant; × ½. 5, flower, expanded; × 1. 6, flower from side, natural position; × 1.

as the lateral sepals. Lip adnate to the column nearly up to its apex; lamina simple, suborbicular-obovate, minutely retuse and apiculate at the broadly rounded apex, about 5.8 mm. long and subequally broad above; disc mostly occupied by a large subquadrate-ovate, acute, 5-lobed callus. Column stout, abbreviated, about 2 mm. long. Ovary with a small subglobose vesicle at the summit.

Loreto: Vicinity of Iquitos, 100 meters, *Klug 10117* (type). Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 984* (plant abnormally small).

Epidendrum mancum Lindl. Bot. Reg. 30, Misc. 83, no. 3. 1844; Fol. Orch. Epidendrum 44, no. 136. 1853.

Plant medium-sized, loosely branching. Stem entirely concealed by rather loose, tubular, imbricating sheaths which are scarious and often evanescent below and leaf-bearing above. Leaves 2–4 to a branch, loosely distichous on the upper portion of the stems or branches, oblong-elliptic to narrowly elliptic-oblong, about 10 cm. or less long and 2 cm. or less wide, lightly bilobulate at the rounded apex, clasping at the base, fleshy-coriaceous. Inflorescence terminal, suberect to arcuate, about twice or more longer than the leaves, racemose above; peduncle more than half concealed by 1 or 2 prominent, complanate spathes which are about 6.5 cm. or less long; raceme rather loosely many-flowered, about 16 cm. or less long, with small to minute floral bracts. Flowers small, fleshy, orange and yellow, yellow spotted with red, or green and red. Dorsal sepal rounded-obovate or oblong-oval, broadly obtuse and apiculate, about 6.5 mm. long. Lateral sepals very similar but a little wider. Petals cuneate-spatulate, rounded or subacute at the apex, nearly as long as the sepals. Lip adnate to the column up to its apex, about as long as the sepals; lamina small, simple, ovate, concave with incurved margins; disc mostly occupied by a large callus with or without membranaceous margins. Column relatively large, stout, dilated upward, terminating on each side in an oblique auricle.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 150. 1921. Also Ecuador (type) and Colombia.

Epidendrum megagastrium Lindl. Fol. Orch. Epidendrum 49, no. 156. 1853; Cogn. Martius Fl. Bras. 3, pt. 5: 146. 1898.

Plant large, with a creeping or ascending stem which is loosely branching, more or less rooting, and entirely or mostly concealed by tubular, usually imbricating sheaths, the lower sheaths being close, scarious and evanescent and the upper ones loose and leaf-bearing; lateral stems or branches short, ascending, up to 16 cm. long, concealed by tubular, imbricating sheaths which are commonly leaf-bearing except at the very base. Leaves 2–6 to a branch, distichous, loose, widely spreading, ovate-oblong or elliptic-oblong (rarely ovate-elliptic), obliquely bilobulate at the obtuse to rounded apex, clasping at the base, up to 9.5 cm. long and 3.5 cm. wide, coriaceous. Inflorescence abbreviated, densely racemose, 2- to 6-flowered, the rachis mostly or entirely concealed by 2 (rarely 1) imbricating, conduplicate spathes. Floral bracts minute, much shorter than the slender pedicellate ovary which bears a slender elongate sac near the apex. Flowers medium-sized, more or less fleshy. Dorsal sepal lanceolate, oblong-lanceolate or elliptic-lanceolate, acute or acuminate, 2 cm. or less long. Lateral sepals similar, obliquely lanceolate or elliptic-lanceolate, slightly wider than the dorsal sepal, obliquely adnate to the column at the base. Petals narrowly elliptic-lanceolate or linear-lanceolate, acute, almost equaling the sepals. Lip adnate to the column up to its apex; lamina simple, ovate-triangular, cordate at the base, acute or acuminate at the apex, concave, 11–12 mm. long in the middle, 9–10 mm. wide; disc with a pair of minute, carinate calli at the base and a more or less thickened median line. Column stout, up to 8 mm. long at the back, with a transverse auricle on each side at the summit.

Amazonas: Chachapoyas, on trees, *Mathews s.n.* (type).—Huánuco: Cani, 7 miles northeast of Mito, about 2600 meters, on shrubby hillside, *Macbride 3451.*—Junín: Palca, 2700 meters, *Soukup 3500.* Also Ecuador.

Epidendrum mesomicron Lindl. Fol. Orch. Epidendrum 51, no. 161. 1853.

Plant stout, with a creeping rhizome (often not shown in the specimens). Stems about 17–43 cm. high, concealed below by close, tubular, scarious sheaths, distichously leafed above. Leaves 2–6, more or less remote, elliptic to elliptic-oblong, 3.4–16 cm. long, up to 5.7 cm. wide, rounded at the apex, amplexicaul at the base, spreading. Inflorescence erect, racemose to sparingly paniculate (with few, short, lateral branches), up to 20.5 cm. tall; peduncle with a solitary, more or less prominent spathe near the base; raceme (or panicle) up to 14 cm. long, loosely several- to many-flowered. Flowers pale green or yellowish green, with spreading segments. Dorsal sepal obovate-oblong or broadly oblanceolate, acute, up to 13.5 mm. long. Lateral sepals very obliquely obovate-oblong or broadly oblanceolate, acute at the thickened apex, slightly longer than the dorsal sepal. Petals linear-oblanceolate, oblique and very lightly sigmoid, acute or obtuse, slightly shorter and much narrower than the sepals. Lip adnate to the column up to its apex; lamina deeply 3-lobed, cordate at the base, up to 8 mm. long and 13 mm. wide across the lateral lobes when expanded; lateral lobes obliquely oblong-oval or semiorbicular-dolabriform ("rounded"), irregularly dentate on the outer margin; mid-lobe much smaller, triangular-ovate or oblong-ovate, obtuse, fleshy; disc with 2 prominent, complanate-conical calli at the base and carinate-thickened nerves on the lateral lobes. Column rather short, with the upper part abruptly dilated in front, up to 8 mm. high at the back.

Cuzco: Prov. of Quispicanchis, Hda. Ttío, Marcapata, 2000 meters, in humid forest, *Vargas 3121.*—Huánuco: Prov. of Huánuco, Carpish, 2850 meters, epiphyte, *Asplund 13131.* Bolivia (type).

The description of the calli on the lip in the type diagnosis is scarcely applicable to the two Peruvian collections.

Epidendrum micranthum Lindl. Hook. Journ. Bot. 3: 88, no. 22. 1841; Fol. Orch. Epidendrum 89, no. 283. 1853; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 237. 1944. *Amblostoma holochilum* Schltr. Fedde Repert. 10: 387. 1912; Mansf. Fedde Repert. Beih. 58: t. 40, nr. 158. 1930.

Plant epiphytic, variable, medium-sized to large, with an apparently abbreviated rhizome. Stems approximate, cylindric to fusiform-cylindric, about 12–35 cm. long, entirely concealed by tubular, imbricating sheaths which are close, scarious and evanescent below and leaf-bearing near the apex. Leaves 3–5, more or less congested near the apex of the stem, distichous, linear-lanceolate, long-acuminate, clasping at the base, up to 23.6 cm. long and 1.6 cm. wide (more or less variable in size on the same plant), spreading. Inflorescence terminal, commonly a few- or many-branched panicle (rarely a raceme), more or less surpassing the leaves, with spreading, elongate, slender branches. Floral bracts inconspicuous, with a broad triangular base and acuminate-setaceous apex. Flowers very small, numerous, sublax, greenish yellow or brownish white. Sepals carinate without. Dorsal sepal obovate-oblong, subobtuse and apiculate, 3 mm. or less long. Lateral sepals obliquely oblong-elliptic, slightly broader than the dorsal sepal. Petals obliquely oblanceolate-linear, obtuse, a little shorter than the sepals. Lip adnate to the column up to its apex, slightly exceeding the sepals; lamina very variable in form, simple or subsimple, oblong-ovate to ovate-subrotund or subquadrate-ovate, cordate at the base, broadly rounded to slightly retuse at the truncate apex, about 2 mm. in greatest length; disc with a more or less distinct, small trilobulate or tricarinate callus at the base. Column stout, strongly sigmoid-dilated toward the apex in front. Ovary with a semiglobose vesicle at the summit.

Peru: Habitat not recorded, *Mathews 1858* (type).—Huánuco: Between Huánuco and Pampayaco (Pampayacu), *Kanehira 318*. Pampayaco (Pampayacu), hacienda at the mouth of Río Chinchao, about 1070 meters, *Macbride 5116*.—Junín: Chanchamayo Valley, 1200 meters, *Schunke s.n., 1313*. Chanchamayo, Río Blanco, about 1400 meters, on tree trunk in woods, *Köhler s.n.* (type of *Amblostoma holochilum*). Pichis Trail, Yapas, 1350–1600 meters, in dense forest, *Killip & Smith 25465*. Prov. of Tarma, Utcuyacu, 1900 meters, on forest tree, *Woytkowski 35364, 35378*.

Epidendrum micro-Cattleya (Kränzl.) Schltr. Fedde Repert. Beih. 9: 150. 1921. *Neolehmannia Micro-Cattleya* Kränzl. Fedde Repert. 1: 180. 1905.

Plant small, with a creeping, somewhat branched rhizome which is often arcuate in the dried specimen and is entirely concealed by the dense pseudobulbs. Pseudobulbs cylindric or "fusiform," 1- or 2-leafed at the summit, plurisulcate and more or less arcuate when dry, partially invested by a scarious, evanescent spathe, up to 3 cm. long. Leaves oblong to oblong-elliptic, bilobulate and apiculate at the obtuse apex, clasping at the sessile base, up to 5.5 cm. long and 1 cm. wide, fleshy-coriaceous, spreading. Inflorescence short, terminal, subequaling or shorter than the leaves, 1- or 2-flowered at the summit, the lax peduncle being partly concealed by a conspicuous, conduplicate spathe about 2 cm. long. Floral bracts minute, many times exceeded by the elongate pedicelled ovary which bears through the upper part a long narrow tube. Flower medium-sized, campanulate, purple. Dorsal sepal elliptic-oblong, obtuse, about 1 cm. long. Lateral sepals similar, oblique. Petals broader and nearly as long as the sepals, thinner in texture. Lip long-adnate to the column; lamina entire, oblong or elliptic, rounded at the apex; disc with 2 short, rather conspicuous lamellae and a lightly thickened mid-nerve. Column short, stout.

Junín: Prov. of Tarma, mountains west of Huacapistana, 2600–3000 meters, in humid open forest mingled with shrubs, *Weberbauer 2078.*

This description was drawn from an excellent photograph of the type specimen of *Neolehmannia Micro-Cattleya,* supplemented in part by the description of this concept.

Epidendrum microtos Reichb. f. Bonpl. 4: 326. 1856; Cogn. Martius Fl. Bras. 3, pt. 5: 53. 1898.

Plant described only from a large straggling panicle, without any vegetative parts.

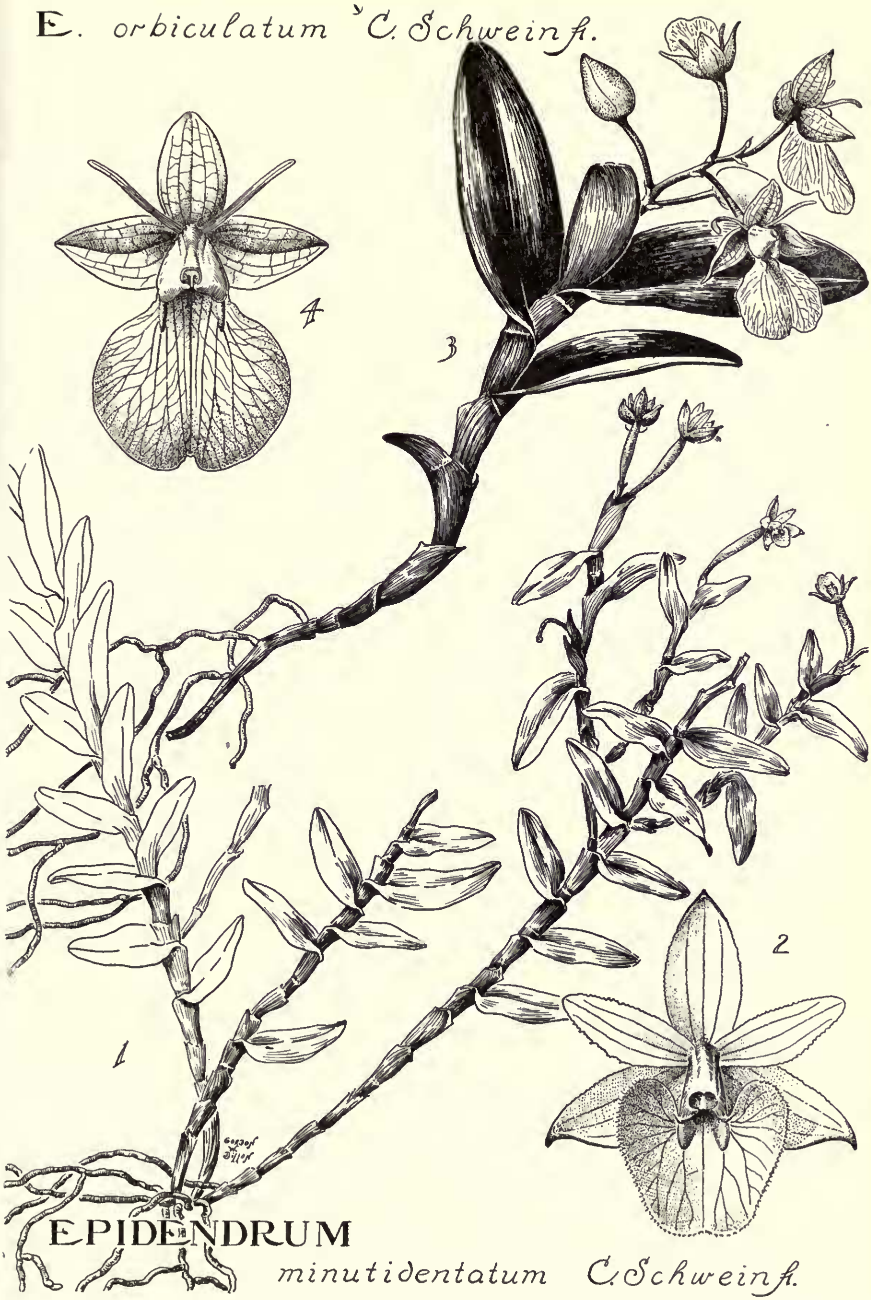
Panicle large, the slender ascending branches apparently about 9 or 10 cm. distant; branches loosely several-flowered, more or less fractiflex above, together with the pedicelled ovary densely scabrous or verruculose. Flowers medium-sized, with spreading segments, rather fleshy. Dorsal sepal oblong-cuneate, acute, about 1.5 cm. long. Lateral sepals similar, slightly oblique. Petals about equaling the sepals, oblong-spatulate, obtuse. Lip almost free from the column; lamina sharply 3-lobed, equaling the sepals in length; lateral lobes small, obliquely triangular-oblong, lightly retrorse, subobtuse, with a subangulate dilation in the middle of the posterior margin; mid-lobe much larger, suborbicular from a cuneate base, strongly undulate-crenate at the broadly rounded apex; disc with a broad, flattened, basal callus extending into 3 thickened lines, all the nerves being elevated. Column rather long, clavate, with a pair of small, incurved, obtuse auricles above.

Peru: Near sources of the Marañon River, *Warscewicz s.n.*

No example of this species was available, but the Ames Herbarium contains a photograph of the type.

Epidendrum minutidentatum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 99, t. 10, figs. 1, 2. 1943. Figure 88.

Plant epiphytic, medium-sized, about 24 cm. or less tall. Stem slender, divaricately branched above, entirely or mostly concealed by loose, tubular-infundibuliform sheaths which are leaf-bearing on the upper part of the stem and branches. Leaves numerous, small, distichous, oblong, ovate-oblong or elliptic-oblong, apiculate at the obtuse or rounded apex, clasping at the base, up to 3.8 cm. long and 1.25 cm. broad, widely spreading. Inflorescence terminal, very short, racemose-subumbellate, 1- to 3-flowered, the abbreviated peduncle concealed by 1 (rarely 2) broad, conduplicate spathes. Pedicellate ovary conspicuous, slender, fusiform above, about 2 cm. or more long. Flowers rather small, reddish-brown. Dorsal sepal oblong-ovate, subacute, about 10 mm. long, with the margins (except at the base and the apex) denticulate-erose. Lateral sepals similar, oblique, sharply acute and mucronate. Petals obliquely elliptic-oblong or rhombic-lanceolate, about 8.8 mm. long, obtuse, with the upper margins denticulate-erose. Lip adnate to


E. orbiculatum C. Schweinf.
4
3
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Gordon Dillon
EPIDENDRUM
minutidentatum C. Schweinf.

FIG. 88. *Epidendrum minutidentatum* C. Schweinf. 1, plant; × ½. 2, flower, expanded; × 2. *E. orbiculatum* C. Schweinf. 3, plant; × ½. 4, flower, expanded; × 1.

the column up to its apex; lamina deeply concave, simple, suborbicular-ovate or quadrate-ovate, deeply cordate at the base, lightly retuse in front, with the margins (except near the base) conspicuously denticulate, about 10 mm. long and slightly broader when forcibly expanded; disc with a pair of conspicuous, complanate calli at the base. Column short and stout, dilated upward, terminating on each side in a transversely subquadrate auricle.

Cuzco: Prov. of Quispicanchis, Marcapata, 3100 meters, "bushwood consisting of high shrubs and small trees, with many hard-leafed types," *Weberbauer 7804.*

Epidendrum minutiflorum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 100, t. 11, figs. 1–9. 1943. Figure 89.

Plant small, slender, epiphytic. Stems slender, more or less arcuate, provided with numerous short branches, entirely concealed (together with the branches) by close, tubular, evanescent sheaths which are leaf-bearing on the upper part of the branches, the main stem often producing short, adventitious roots at the nodes. Leaves 1–4 to a branch, distichous, subterete, filiform, up to 5.3 cm. long, abruptly acute or apiculate, ascending or spreading. Inflorescence terminal, racemose above, up to 4.5 cm. long, the peduncle more or less concealed by a slender, conduplicate, scarious spathe. Raceme rather short, loose, up to 11-flowered. Flowers very small, little open, subglobose-ellipsoid, greenish white. Sepals fleshy, concave. Dorsal sepal ovate, acute, mucronate, about 3.5 mm. long. Lateral sepals slightly larger, obliquely and broadly ovate, sharply acute and mucronate, dorsally carinate. Petals linear, acute, shorter than the dorsal sepal. Lip adnate to the column nearly to its apex; lamina very small, simple, concave, cordate-ovate, about 1.9 mm. long and nearly as wide at the base; disc at the base with a pair of relatively large, fleshy, approximate calli. Column large and stout for the flower, terminating in a transversely subquadrate auricle on each side, about 2.7 mm. long including an auricle.

Cajamarca: Prov. of Cutervo, "10 km. northwest of Socata, ceja de la montaña," 3200 meters, *Stork & Horton 10140.*

Epidendrum modestum Reichb. f. & Warsc. Bonpl. 2: 110. 1854.

Plant stout. Stem stout or slender, entirely concealed by close, tubular, imbricating leaf-sheaths, reaching about 82 cm. in height. Leaves numerous, distichous, oblong-lanceolate to linear-lanceolate, more or less long-attenuate into a subobtuse or acuminate apex, clasping at the base, up to 16.5 cm. long and 2.5 cm. wide, coriaceous. Inflorescence terminal, paniculate (rarely racemose), lax, few-branched,

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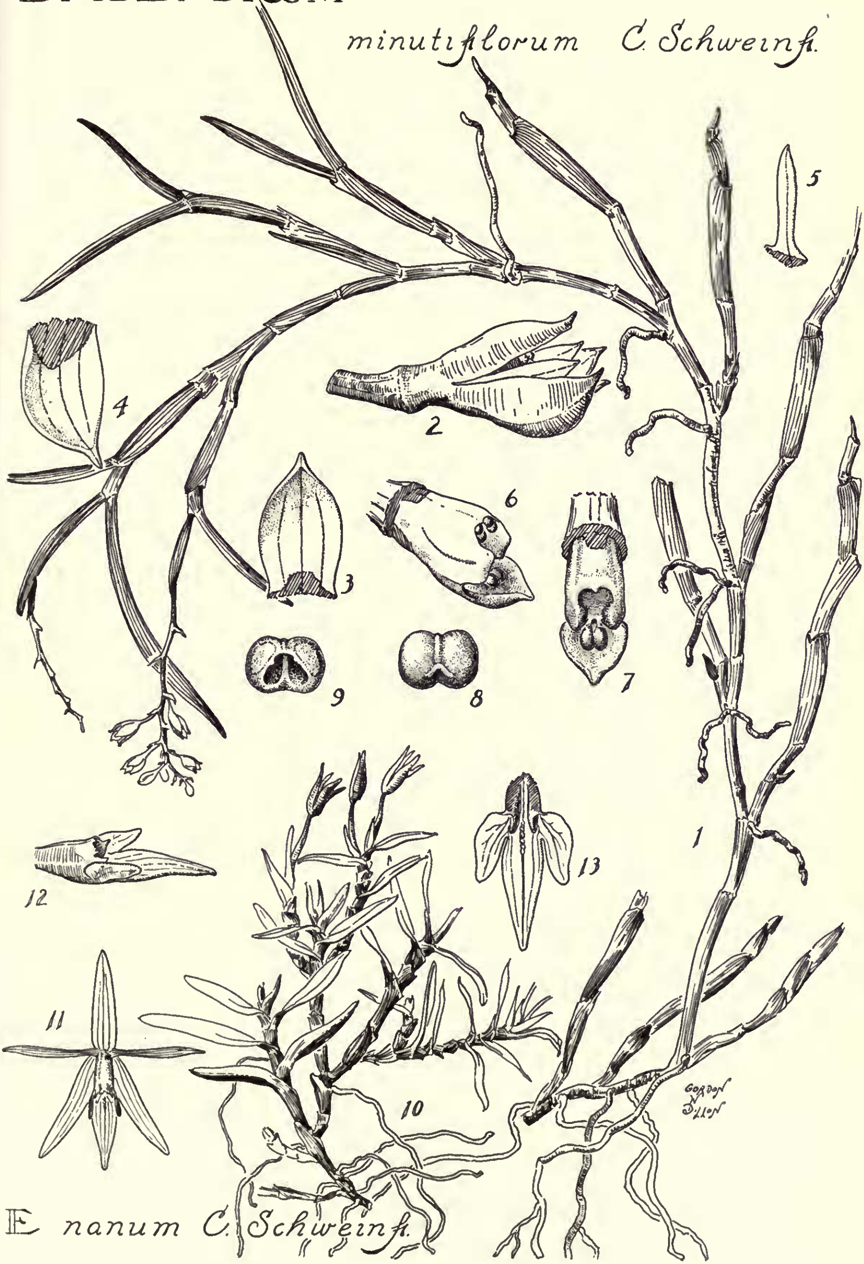
FIG. 89. *Epidendrum minutiflorum* C. Schweinf. 1, plant; × 1. 2, flower from side, natural position; × 5. 3, dorsal sepal; × 5. 4, lateral sepal; × 5. 5, petal; × 5. 6, column and lip from side; × 5. 7, column and lip from above; × 5. 8, anther from above; × 10. 9, anther from below; × 10. *E. nanum* C. Schweinf. 10, plant; × 1. 11, flower, expanded; × 1½. 12, lip and column from side, natural position; × 2½. 13, lip, expanded; × 2½.

EPIDENDRUM

minutiflorum C. Schweinf.



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GORDON DILLON

E *nanum C. Schweinf.*

with arcuate or flexuous branches, apparently subequaling or slightly exceeding the upper leaves, the abbreviated peduncle being concealed and surpassed by 1 or 2 strict, narrowly oblong, conduplicate spathes which are 10 cm. or less long. Floral bracts minute. Flowers rather small, numerous, sublax, with spreading segments, often tan-colored. Dorsal sepal narrowly oblong-oblanceolate or obovate-oblong, acute to subobtuse, up to 14.5 mm. long and 3.9 mm. wide. Lateral sepals very slightly larger, obliquely oblong-oblanceolate or obovate-oblong, acute or sharply acute. Petals nearly as long as the dorsal sepal, oblanceolate-linear, acute or subacute, slightly oblique. Lip adnate to the column up to its apex; lamina sharply 3-lobed, cordate at the base, up to 7 mm. long in the center and 10 mm. wide across the lateral lobes; lateral lobes rounded-semiovate, with irregular to denticulate margins; mid-lobe subquadrate, slightly dilated to the truncate apex which is retuse and apiculate; disc at the base with a pair of fleshy calli flanked with a minute keel on each side and with a fleshy-thickened line in the middle. Column slender, dilated above in front, terminating on each side in a transverse auricle, about 10 mm. long.

Peru: Habitat not recorded, *Warscewicz s.n.* (type).—Cuzco: San Miguel, Urubamba Valley, about 1800 meters, *Cook & Gilbert 921*.—Junín: Prov. of Tarma, Utcuyacu, on road between Palca and San Ramón, about 2000 meters, epiphyte in mountain rain-forest in the valley of the Palca River, *Hodge 6246*.

The above diagnosis was drawn from the original description, from a drawing of *E. modestum* from the Reichenbach Herbarium, and from two collections which appear to be surely referable to this concept. Both of these collections differ from the type as drawn in having narrower and more attenuate leaves. The Hodge collection, cited above, is the only complete specimen which we have seen. Furthermore, it differs from the other forms in having a rather slender stem, a racemose (not paniculate) inflorescence and somewhat smaller and more fleshy flowers which are noted as tan-colored.

Epidendrum monzonense Kränzl. Fedde Repert. 1: 88. 1905.

Plant epiphytic, low. Rhizome elongate, creeping, entirely concealed by the dense, appressed pseudobulbs. Pseudobulbs apparently cylindric and slightly dilated below, finely striate in the dried specimen, monophyllous at the apex, partly concealed by loose imbricating sheaths, up to 6 cm. long and 5 mm. thick. Leaf elliptic to oblong, broadly obtuse with a minute apicule, clasping at the base, up to 10 cm. long and 2 cm. wide, fleshy-coriaceous, commonly erect. Inflorescence terminal, abbreviated, 3-flowered at the apex, the peduncle and rachis concealed by a conspicuous, complanate spathe which is about 5 cm. long. Flowers medium-sized, with spreading segments, brown with a yellow lip. Dorsal sepal oblong-ovate, acute or acuminate, about 1.8 cm. or less long. Lateral sepals similar, oblique, decurved. Petals elliptic-oblong, acute, subequaling the sepals but thinner, with minutely erose margins. Lip adnate to the column up to its apex; lamina sharply 3-lobed, markedly shorter than the sepals, about 1 cm. long and 1.4 cm. wide; lateral lobes dolabriform-semiorbicular, with minutely erose margins; mid-lobe cuneate or obcordate, bilobed with a thickly fleshy, deflexed point in the sinus; disc convex, bituberculate at the base. Column arcuate-decurved, dilated above, about 8 mm. long, terminating in a transverse auricle on each side.

Huánuco: Prov. of Huamalies, mountains west of Monzón, 3400–3500 meters, on cliffs, *Weberbauer 3351*.

This description was compiled by a careful examination of an excellent photograph of the type collection, supplemented by the diagnosis.

Epidendrum moyobambae Kränzl. Fedde Repert. 1: 185. 1905. *Epidendrum subpatens* Schltr. Fedde Repert. Beih. 17: 40. 1922. *Epidendrum benignum* Ames, Sched. Orch. 2: 26. 1923. *Epidendrum amazonicum* Schltr. Beih. Bot. Centralbl. 42, Abt. 2: 78. 1925.

Plant large and stout, variable, with an abbreviated rhizome. Stems approximate, erect or suberect, up to 78 cm. long, entirely invested by close, tubular sheaths which are scarious and evanescent below and usually green and leaf-bearing in the upper portion. Leaves commonly numerous, distichous, spreading, elliptic or elliptic-lanceolate to oblong (rarely narrowly oblong), acute or subacute, deeply clasping at the base, up to 16.5 cm. long and 4.6 cm. wide, coriaceous. Inflorescence terminal, commonly solitary, more or less elongate, racemose (very rarely with 1 or 2 short branches near the base), arcuate or pendent (rarely suberect), loosely few- to many-flowered, the abbreviated peduncle bearing 1 to rarely 5 small, scarious, imbricating spathes. Floral bracts very small, deltoid, much shorter than the slender, elongate pedicelled ovary. Flowers rather large, with spreading segments, greenish, brownish-green, yellow or cream-color sometimes with lilac and a white lip. Sepals fleshy. Dorsal sepal oblong-obovate to oblong-oblanceolate, obtuse, 1.6–2.2 cm. long. Lateral sepals similar, oblique, subacute. Petals similar to the dorsal sepal but narrower and thinner in texture, oblong-cuneate to linear-oblanceolate, subacute to obtuse. Lip adnate to the column up to its apex, much surpassing the rest of the perianth, about 2–2.9 cm. long including the column; lamina sharply 3-lobed, 2–2.9 cm. wide, deeply cordate at the base; lateral lobes very obliquely semiorbicular-dolabriform; mid-lobe somewhat smaller than the lateral lobes, from a more or less distinct subquadrate claw (rarely almost sessile) abruptly dilated into a pair of broadly oblong or suborbicular lobules separated by a deep sinus with a small apicule in the middle; disc with 2 complanate calli at the base and with a central fleshy, elongate keel extending toward the apex. Column strongly but gradually dilated upward in front, terminating on each side in an oblique transverse auricle, up to 1.4 cm. long.

Huánuco: Prov. of Huánuco, Tingo María, epiphyte in forest, *Asplund 13400*. Chinchavillo, 850 meters, epiphyte, *Scolnik 1093*. —Loreto: Near Moyobamba, 800–900 meters, in forest (rather dry with scattered shrubs), *Weberbauer 4563* (type of *E. moyobambae*). Vicinity of Iquitos, 100 meters, beside river, *Klug 10024, 10025*.—San Martín: Juan Juí, Alto Río Huallaga, about 400 meters, in forest, *Klug 3815*. A widespread and variable species extending from Guatemala through Costa Rica (type of *E. benignum*) to Panama (type of *E. subpatens*), Trinidad, Colombia and Brazil (type of *E. amazonicum*).

Epidendrum muricatum Reichb. f. Bonpl. 4: 327. 1856.

Plant apparently large and stout (only the upper part of the plant shown in records seen), terrestrial, up to 2 meters high. Stem robust, entirely concealed by close, tubular, imbricating leaf-sheaths. Leaves distichous, elliptic-lanceolate or ovate-lanceolate, sharply acute or acuminate, clasping at the base, up to 23 cm. long and 5 cm. wide, subcoriaceous, spreading. Inflorescence large, terminal, paniculate, the numerous, arcuate, muriculate branches being subremote and subtended by large and conspicuous, acuminate, spathaceous bracts. Floral bracts narrowly triangular-lanceolate, much shorter than the pedicellate ovary. Pedicellate ovary and exterior surface of the sepals densely muricate. Flowers very numerous, rather loose, small, green, sometimes with a white lip. Dorsal sepal oblanceolate-oblong or obovate-oblong, concave, acute or subacute, fleshy, about 9–10 mm. long. Lateral sepals obliquely oblong-oblanceolate or oblong-obovate, sharply acute, slightly wider than the dorsal sepal. Petals distinctly shorter and thinner than the sepals, oblanceolate-linear or linear, obtuse, irregularly sinuate-denticulate above, strongly reflexed. Lip adnate to the column nearly to its apex; lamina convex, simple, suborbicular-oval or orbicular-subquadrate, cordate at the base, emarginate in front, sinuate-dentate or irregularly erose-dentate on each side, about 5.5 mm. in greatest length and a little wider; disc with a pair of fleshy, subglobose calli at the base in front of which is a large, fleshy, bisulcate callus (or 3 approximate fleshy calli). Column stout, distinctly dilated upward in front, terminating on each side in a transversely oblong auricle, about 5.5 mm. long at the back.

"Amazonas," fide Schlechter, Fedde Repert. Beih. 9: 150. 1921.—Cuzco: Prov. of Convención, heights of Pintobamba, 2700 meters, in woods, *Vargas 3241*.—Junín: Carpapata, above Huacapistana, 2700–3200 meters, at the edge of the forest, *Killip & Smith 24435*. Ecuador (type).

Since the completion of this enumeration, it has been pointed out by Mr. A. D. Hawkes, in Orquidea 18: 170. 1956, that this name is a homonym and he proposes for it the new name, *E. Goodspeedianum*.

Epidendrum nanum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 102, t. 11, figs. 10–13. 1943. Figure 89.

Plant very small, commonly divaricately branched, in habit similar to *E. Porpax* Reichb. f. Stems slender, usually much branched and spreading, entirely concealed by short, loose, tubular or infundibuliform sheaths which are commonly evanescent below and persistent and leaf-bearing above. Leaves distichous, horizontally spreading, linear, fleshy, obtuse and minutely apiculate, clasping at the base, commonly up to 17 mm. long and 2 mm. wide (rarely 28 mm. long and 3.7 mm. wide). Inflorescence terminal, abbreviated, apparently sessile, commonly 2-flowered, each flower in the axil of a conspicuous conduplicate, carinate bract. Flowers small but large for the plant. Dorsal sepal narrowly lanceolate or oblong-lanceolate, acute or acuminate, about 9.5 mm. long. Lateral sepals obliquely linear-lanceolate, acuminate, a little longer than the dorsal sepal, dorsally carinate. Petals obliquely linear, acute, slightly shorter than the dorsal sepal. Lip adnate to the column nearly to its apex; lamina sharply 3-lobed near the shallowly cordate base, up to 7.9 mm. long in the middle; lateral lobes aliform, semiovate, obtuse, suberect in natural position; mid-lobe much larger, porrect, lanceolate to linear-lanceolate, narrowed to an obtuse apex; disc with a pair of dentiform calli at the base. Column short, stout, dilated upward, up to 4 mm. long at the back, denticulate at the apex, with an obliquely triangular tooth on each side.

Junín: Chanchamayo Valley, 1800 meters, *Schunke 544* (type). Same locality and altitude, *Schunke 522.* Schunke Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A 55.*

Epidendrum nephroglossum Schltr. Fedde Repert. Beih. 9: 89. 1921; Mansf. Fedde Repert. Beih. 57: t. 119, nr. 469. 1929; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 238. 1944.

Plant epiphytic, variable. Stem loosely branching, up to more than 1 meter long, ascending or lax, concealed by tubular sheaths (often infundibuliform in upper part) which are scarious, leafless and evanescent below and leaf-bearing above. Leaves 3–5 in a cluster, distichous, more or less congested at the apex of the stem or on the short lateral branches, elliptic or oblong-elliptic to oblong-lanceolate, acute to subobtuse, clasping at the base, up to 11.8 cm. long and 2.6 cm. wide, thinly coriaceous. Inflorescences short, racemose, more or less erect in youth, becoming flexuous or nodding in the course of development, up to 20-flowered, rather loose, subequaling the leaves, the short peduncle provided with an inconspicuous spathe and the rachis more or less fractiflex. Floral bracts ovate or ovate-lanceolate, acuminate, concave, a little shorter or longer than the pedicelled ovary. Flowers medium-sized, grass-green or greenish-white to pale yellow, fleshy. Dorsal sepal ovate-elliptic, acute with a dorsal mucro, up to 1.8 cm. long. Lateral sepals obliquely ovate-lanceolate or elliptic-lanceolate, acuminate, commonly with a rather high dorsal keel, about 2 cm. or less long. Petals variable, linear-oblanceolate or elliptic-linear, acute or subacute, distinctly shorter than the dorsal sepal. Lip adnate to the column up to its apex; lamina simple, cordate-semiorbicular or reniform, lightly retuse in front, cordate at the base, up to 9 mm. long in the middle and 1.5 cm. wide across the broadest part; disc bicallose at the base, with more or less distinct fleshy-thickened, radiating nerves. Column gradually dilated upward, terminating on each side in a transverse subquadrate auricle, up to 1.2 cm. long when viewed from the side.

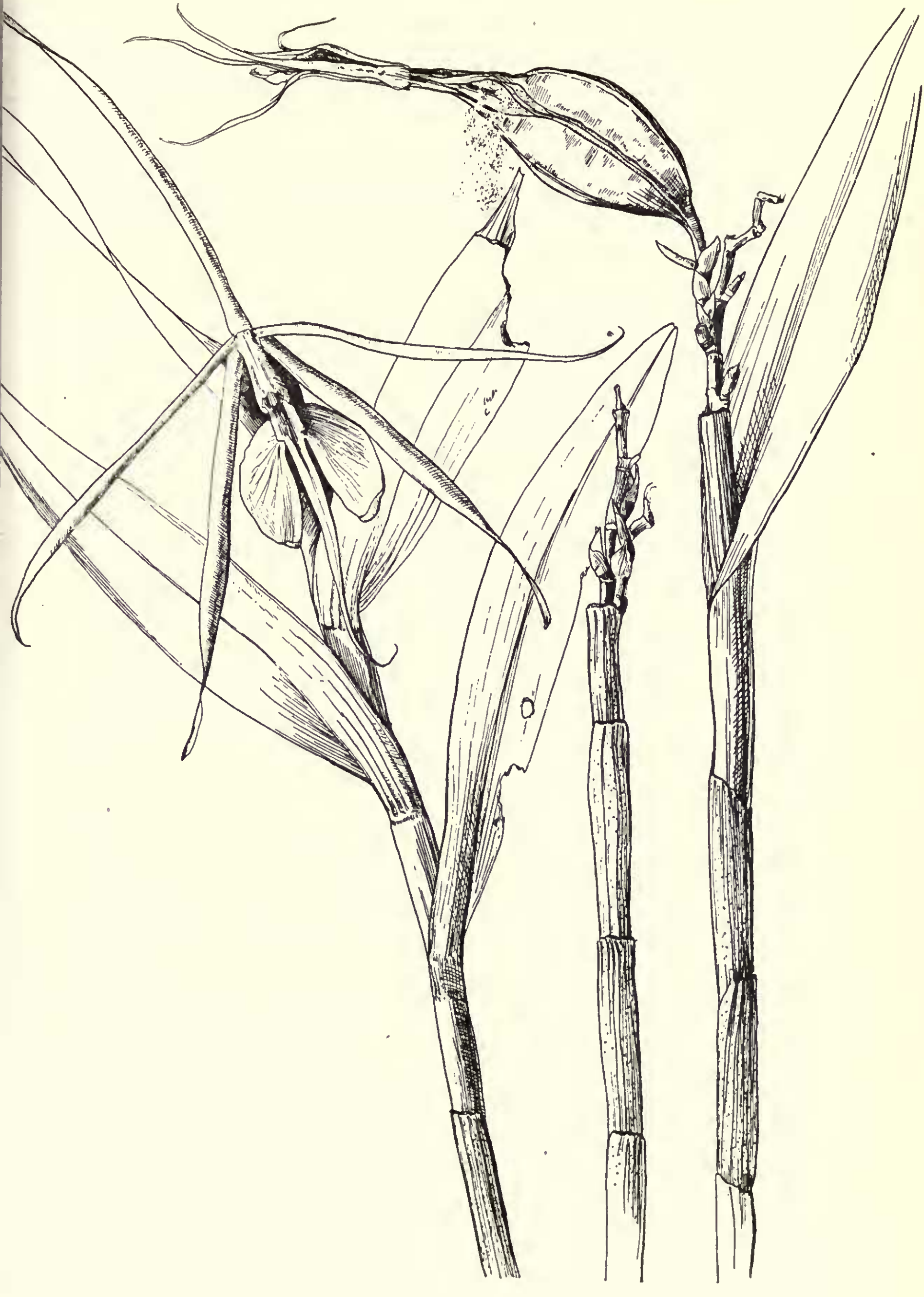
Apurimac: Prov. of Abancay, Ampuy, 3100 meters, epiphyte on *Podocarpus, Stork, Horton, Vargas 10604.*—Huancavelica: Prov. of Tayacaja, Ampurco woods, Salcabamba-Surcubamba Trail, 2900 meters, on mossy tree trunk, *Stork & Horton 10426.*—Huánuco: Yanano, about 1800 meters, *Macbride 3663.*—Junín: On mountains west of Huacapistana, 2500–2600 meters, *Weberbauer 2174* (type). East of Quimirí Bridge, near La Merced, 800–1300 meters, in dense forest, *Killip & Smith 23853* (flower rather abnormal).—Puno: Ollachea at Ackopampa bridge, 3000 meters, humus-covered rocks, *Vargas 6980.*

Epidendrum nocturnum Jacq. Enum. Pl. Carib. 29. 1760; Select. Stirp. Amer. 225, t. 139. 1763. *Nyctosma nocturna* Rafin. Flor. Tellur. 2: 9. 1837. *Epidendrum nocturnum* Jacq. var. *latifolium* Lindl. Bot. Reg. 23, t. 1961. 1837. *Epidendrum tridens* Poepp. & Endl. Nov. Gen. ac Sp. 2: 2, t. 103. 1837–38. *Epidendrum discolor* A. Rich. & Gal. Ann. Sci. Nat. ser. 3, 3: 22. 1845. *Epidendrum Spruceanum* Lindl. Fol. Orch. Epidendrum 80, no. 253. 1853. *Epidendrum nocturnum* Jacq. var. *tridens* Cogn. Martius Fl. Bras. 3, pt. 5: 136. 1898. Figure 90.

Plant extremely variable, epiphytic (rarely terrestrial). Rhizome stout, abbreviated. Stems fascicled, slender or stout, ancipitous and often enlarged upward, simple, up to 100 cm. tall, entirely concealed by close, tubular sheaths which are scarious, non-leaf-bearing and evanescent below and leaf-bearing in the upper portion. Leaves distichous, several to numerous, spreading, oblong to oval, obtuse to rounded or rarely retuse or subacute at the apex, clasping at the base, up to 18 cm. long and 6.6 cm. wide, commonly coriaceous and fleshy. Inflorescence consisting of an abbreviated, subumbellate, often branched raceme, sometimes 1-flowered, with 1 or 2 flowers blooming at a time. Floral bracts very small, ovate or ovate-lanceolate, acute or acuminate, concave, many times shorter than the elongate pedicellate ovary which is up to 17 cm. long. Flowers large, with spreading segments. Sepals white, whitish-green (or bronzy green), cream-color, or reddish yellow. Dorsal sepal linear-lanceolate, long-acuminate, 3.6–9 cm. long. Lateral sepals similar but commonly a little larger than the dorsal sepal, lightly oblique. Petals whitish or pale green, linear to filiform (rarely narrowly oblanceolate), acuminate, nearly as long as the dorsal sepal. Lip adnate to the column nearly to its apex, somewhat shorter than the sepals; lamina sharply 3-lobed, white; lateral lobes obliquely semiovate or ovate-lanceolate, lightly cordate or subcordate at the base, obtuse to acuminate at the apex, up to 3.8 cm. long, with the margins entire or rarely denticulate; mid-lobe more or less surpassing the lateral lobes, linear-filiform or setaceous (rarely linear-triangular), long-acuminate, up to 5.7 cm. long; disc with two elongate complanate calli at the base between the lateral lobes. Column gradually or abruptly dilated upward, dentate to entire at the apex, up to 2.5 cm. long.

Cuzco: Prov. of Paucartambo, Sta. Isabel, Cosñipata, 1800 meters, *Vargas 5527, 5529*.—Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 150. 1921.—Junín: Chanchamayo Valley, 1200 meters, *Schunke 1242*. Same locality, 1000 meters, *Schunke 1638*. Schunke Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A 57, Killip & Smith 24862*. Prov. of Tarma, Agua Dulce, 1900 meters, epiphyte in low highland forest, *Woytkowski 35478*.—Loreto: Gamitanacocha, Río Mazán, 100–125 meters, *Schunke 309, Vargas 4634*. Vicinity of Iquitos, 100 meters, *Klug 10018, Tessmann*

FIG. 90. *Epidendrum nocturnum* Jacq. Flowering and fruiting plants; × 1. Drawn by Blanche Ames.



3655, 5739. Mishuyacu, near Iquitos, 100 meters, *Klug 1058.*—San Martín: Near Divisoria, on steep bank, 59 km. from Tingo María on highway to Pucallpa, about 1600 meters, *Allard 21777* (petals broad), *21786.* A widespread and variable species extending from Florida (U.S.A.) and the West Indies (type of *E. nocturnum* and *Nyctosma nocturna*), through Mexico (type of *E. discolor*) and Central America to Brazil (type of *E. Spruceanum*), Peru (type of *E. tridens*) and Bolivia.

Epidendrum nocturnum Jacq. var. **minus** Cogn. Bull. Soc. Roy. Bot. Belg. 43: 323. 1906. *E. longicolle* Lindl. Bot. Reg. 24, Misc. 34, no. 49. 1838; Hook. Bot. Mag. 71, t. 4165. 1845; Lindl. Fol. Orch. Epidendrum 81, no. 255. 1853. *E. oliganthum* Schltr. Fedde Repert. Beih. 9: 90. 1921; Mansf. Fedde Repert. Beih. 57: t. 120, nr. 470. 1929.

This variety is distinguished from the species by its small size and slender habit and especially by its narrow leaves and small flowers. Stems up to about 54 cm. high. Leaves linear to linear-oblong (rarely linear-lanceolate), strict, up to 12.5 cm. long and 1.5 cm. wide. Flowers white, with sepals up to 4 cm. long.

Loreto: Gamitanacocha, Río Mazán, 100–125 meters, *Schunke 241.* Near Cerro de Escaler, *Ule 6689* (type of *E. nocturnum* var. *minus*). Mishuyacu, near Iquitos, 100 meters, epiphyte in forest, *Klug 1404, 1179.* Vicinity of Iquitos, 100 meters, *Klug 10004, 10005, 10068.* Near Moyobamba, *Filomeno s.n.* (type of *E. oliganthum*). Also British Guiana (type of *E. longicolle*) and Brazil.

Epidendrum nutans Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 245. 1798.

Huánuco: Muña and Chaclla, on trees and rocks, *Pavón s.n.*

This is an obscure species.

Epidendrum oligophyllum Lehm. & Kränzl. Engler Bot. Jahrb. 26: 477. 1899.

Plant epiphytic, loosely branched, medium-sized. Stem and branches entirely concealed by tubular sheaths which are scarious, leafless and evanescent below and leaf-bearing above. Leaves in groups of 3–4, more or less approximate, commonly on the upper half of each branch, distichous, elliptic or oblong-elliptic, acute, narrowed to a clasping base, up to 7.2 cm. long and 2.3 cm. wide, thinly coriaceous. Inflorescence more or less shorter than the leaves, racemose through the upper half, erect or arcuate; peduncle bialate, up to 2 cm. long; rachis about 1.4 cm. or less long, few- (up to 8-) flowered. Floral bracts very small, triangular-lanceolate, acuminate, concave, much shorter than the pedicellate ovary. Flowers small, brownish-olive, with spreading or reflexed segments. Dorsal sepal cuneate-oblanceolate, acute, about 1.4 cm. long and nearly 5 mm. wide above. Lateral sepals very obliquely oblong-obovate, acute and dorsally carinate at the apex, slightly longer and markedly broader than the dorsal sepal. Petals oblanceolate-linear, lightly falcate, subacute, shorter than the dorsal sepal. Lip adnate to the column up to its apex, slightly exceeding the sepals; lamina sharply 3-lobed, cordate at the base, about 1.4 cm. wide across the lateral lobes; lateral lobes dolabriform-semiovate, obtuse; mid-lobe smaller, porrect, subquadrate, retuse or bilobed, a little exceeding the apex of the lateral lobes; disc in the lower half with 2 fleshy keels which are highest near the base. Column much dilated in front above the middle, about 1.2 cm. long.

Amazonas (ex Kränzlin), fide Schlechter, Fedde Repert. Beih. 9: 151. 1921. Also Colombia (type).

A specimen of the type number furnished the above diagnosis.

Epidendrum oncidioides Lindl. var. **gravidum** (Lindl.) Ames, Hubb. & Schweinf. Bot. Mus. Leafl. Harvard Univ. 3: 104. 1935. *Epidendrum gravidum* Lindl. Journ. Hort. Soc. London 4: 114. 1849; Ames, Sched. Orch. 4: 42, t. 2. 1923.

Plant extremely variable, epiphytic, up to about 60 cm. tall, with an abbreviated rhizome and approximate pseudobulbs. Pseudobulbs pyriform-cylindric to broadly ovoid, 1- (rarely) to 3-leaved at the apex, about 6.5 cm. or less high. Leaves narrowly linear to lorate, up to 41 cm. long and 2.9 cm. wide, acute to obtuse, clasping at the base, coriaceous. Inflorescence terminal, simple and loosely few-flowered (racemose) to rather densely paniculate, shorter than to much surpassing the leaves. Pedicellate ovary smooth or verruculose to strongly muricate when mature. Flowers medium-sized, with spreading segments. Dorsal sepal oblanceolate to elliptic-oblanceolate or oblong-lanceolate to elliptic-lanceolate, 11–18.8 mm. long, subacute to acuminate, thickened at the apex. Lateral sepals elliptic-lanceolate or oblong-lanceolate, acute to acuminate at the dorsally thickened apex, about equaling the dorsal sepal. Petals narrowly oblanceolate to spatulate-oblanceolate, subacute to acute, subequaling the dorsal sepal. Lip adnate to the basal part of the column, deeply 3-lobed, a little shorter than the column, up to 15.1 mm. long; lateral lobes narrowly to broadly oblong or triangular-lanceolate to triangular-ovate, more or less oblique and falcate, obtuse to broadly rounded at the apex, erect in natural position; mid-lobe more or less clawed, suborbicular to transversely oval or rhombic-ovate (rarely broadly obovate), rounded to short-acuminate (rarely truncate) at the apex, rounded to cuneate at the base, with more or less undulate and crenulate margins; disc with a broad central callus which is oval-depressed on the claw and divides into 3 or more thickened veins on the mid-lobe, all the veins more or less verrucose. Column straight to slightly recurved, with 2 porrect, rounded, incurved auricles or obscure angles near the summit, up to 8 mm. long.

Junín: Chanchamayo Valley, 1500 meters, *Schunke 1248.*—Loreto: Vicinity of Río Napo, 100 meters, *Klug 10120.* Also Mexico (type of *E. gravidum*), Central America, Cuba, Puerto Rico, Trinidad and Colombia.

Epidendrum orbiculatum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 104, t. 10, figs. 3, 4. 1943. Figure 88.

Plant robust and rather short, up to 25 cm. tall (lower portion missing in type specimen). Stem simple or with a single abbreviated branch below, straight or arcuate, entirely or mostly concealed by loose, infundibuliform sheaths which are leaf-bearing except on the basal part, rooting on this lower portion. Leaves 4, distichous, widely spreading, oval to oblong-elliptic (rarely oblong-lanceolate), up to 7.3 cm. long and 3 cm. wide (the lower blades much smaller), bilobulate at the rounded or obtuse apex, clasping at the base, chartaceous when dry. Inflorescence terminal, 3- to 5-flowered, very loosely racemose, subtended by a large and conspicuous, conduplicate spathe up to 3.5 cm. long and about 1.5 cm. wide, entirely concealing the short peduncle. Flowers large, long-pedicelled, greenish or greenish brown. Dorsal sepal ovate-elliptic, obtuse with a minute dorsal mucro, concave, about 1.5 cm. long. Lateral sepals obliquely oblong-ovate, obtuse or subacute, navicular, dorsally carinate, a little longer and broader than the dorsal sepal. Petals linear, about 1.6 cm. long and 1 mm. wide, obtuse. Lip adnate to the column up to its apex; lamina simple, suborbicular, prominently emarginate, about 2.2 cm. long on each side of the center and 2.6 cm. wide, broadly cuneate at the base; disc with a pair of short, fleshy, widely separated keels at the base. Column very short and stout, broadly conical when viewed from the side.

Cuzco: Prov. of Calca, Lares Valley above Mantoc, 2400–2500 meters, on rocks, *Weberbauer 7904.*

Epidendrum Ottonis Reichb. f. Hamb. Gartenz. 14: 213. 1858.

Plant small, epiphytic, with a creeping, branching rhizome. Pseudobulbs numerous, more or less approximate, cylindric to narrowly ellipsoid, shortly stipitate, compressed, up to 4 cm. long, concealed by several evanescent, scarious, imbricating sheaths, unifoliate at the apex. Leaf linear, acute and apiculate to obtuse at the apex, clasping at the base, up to 15.7 cm. long and 8 mm. wide. Inflorescence terminal, slender, subequaling or shorter than the leaf, up to 11.2 cm. long, loosely racemose above, up to 6-flowered, the peduncle clothed with several narrow, strict, scarious sheaths. Rachis more or less concealed by strict, linear-lanceolate, acuminate, clasping floral bracts. Flowers small, whitish or cream-colored, nodding, fleshy. Dorsal sepal lanceolate, acuminate, concave, about 9.8 mm. or less long, carinate toward the apex. Lateral sepals a little smaller than the dorsal sepal, lanceolate or oblong-lanceolate, slightly oblique. Petals narrowly elliptic-lanceolate, slightly oblique, acute or acuminate, distinctly shorter and narrower than the sepals. Lip adnate to the very base of the column, erect and gently recurved in natural position, simple, linear-oblong, acute and apiculate, up to 6.8 mm. long and 2 mm. wide, dorsally carinate above, with incurved sides; disc through the lower half with a pair of fleshy incurved thickenings. Column short, stout, slightly dilated upward, denticulate at the apex, about 4 mm. or less long.

Loreto: Vicinity of Iquitos, 100 meters, *Klug 10115.* Also the West Indies, Panama and Venezuela (type).

Epidendrum pachychilum Kränzl. Fedde Repert. 1: 184. 1905; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 12. 1953. *Epiden-*

drum aquaticoides C. Schweinf. var. *pusillum* C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 82. 1943.

Plant rather large. Stem much branched, entirely concealed by close, tubular, striate-rugose sheaths which are short, scarious and leafless at the base of the branches, and often elongate and always leaf-bearing above. Leaves 2–20 on each branch, distichous, loose, strictly ascending to imbricating in the dried specimen, linear-oblong (or rarely ovate-lanceolate) to lanceolate-oblong, obtuse or acute and shortly apiculate, clasping at the base, coriaceous, with the margins revolute in the dried specimen, up to 5.3 cm. long and 8 mm. wide. Inflorescences terminal, erect, racemose, shorter than to exceeding the leaves, few- (4- to 9-) flowered, with the abbreviated peduncle and rachis subcompressed. Floral bracts ovate to ovate-lanceolate, acuminate, subequaling or shorter than the triquetrous pedicelled ovary. Flowers medium-sized, fleshy, greenish-yellow to orange-red. Dorsal sepal ovate-elliptic, acute, 8–10 mm. long. Lateral sepals obliquely ovate or elliptic-ovate, subequaling the dorsal sepal but slightly broader, acute, dorsally carinate. Petals linear-lanceolate or linear-oblanceolate, slightly shorter than the sepals, thinner in texture. Lip apparently adnate to the column up to its apex; lamina simple, broadly triangular-ovate, very fleshy, concave-conduplicate, cordate at the base, obtuse or subacute at the apex, 5–10 mm. long in the center and broader when expanded, apparently entirely without calli or keels. Column short, stout, dilated above, the apex concealed by the incurved sides of the lip.

Cuzco: Prov. of Urubamba, near Wenner Gren ruins, 3400–3600 meters, in open soaking sphagnum bog with much fog and rain, perianth fleshy, *Metcalf 30757*. Prov. of Urubamba, on trail from Puyupata to Sayacmarca, epiphytic, 3600 meters, *Vargas 2894* (type of *E. aquaticoides* var. *pusillum*). Same data as last, 2650 meters, *Vargas 7257*.—Junín: Prov. of Tarma, mountains west of Huacapistana, 3000–3100 meters, between bushes, *Weberbauer 2054* (type of *E. pachychilum*).

Epidendrum panchrysum Reichb. f. & Warsc. Allg. Gartenz. 22: 313. 1854.

This species was described only from the flower and lacked all vegetative parts; accordingly it was not included in the key. On a sheet bearing alleged records of *E. panchrysum* from the Reichenbach Herbarium is the upper portion of an inflorescence crowned with a loose terminal raceme bearing about 7 flowers. This fragment may represent the type, because the floral analysis drawn immediately below it surely depicts what is described.

Flowers small, golden yellow. Sepals elliptic-lanceolate, acute. Petals similar to the sepals but smaller. Lip adnate to the column up to its apex; lamina sharply 3-lobed; lateral lobes shortly and broadly dolabriform ("obtriangular"), the broad outer margin being sinuate-dentate with 5 or 6 prominent teeth; mid-lobe smaller, obovate-cuneate, sinuate-dentate with 5 teeth; disc at the base with a ligulate, bicornute callus which is extended in front into a semiorbicular ("hippocrepiform"), plicate, abruptly apiculate callus. Column with a 3-dentate clinandrium.

Peru: Habitat not recorded, *Warscewicz s.n.*

Epidendrum panicoides Schltr. Fedde Repert. Beih. 9: 90. 1921; Mansf. Fedde Repert. Beih. 57: t. 120, nr. 471. 1929.

Plant epiphytic, about 40 cm. high, with an abbreviated rhizome. Stems fascicled, slender, simple, subcompressed, leafy, entirely concealed by close, tubular leaf-sheaths. Leaves erect-spreading, linear, acute, up to 12 cm. long and 8 mm. wide, rather thin in texture. Inflorescences terminal, erect-spreading or arcuate, up to 6 cm. long, loosely 6- to 9-flowered above, the rachis being flexuous; peduncle short, 1-sheathed at the base. Floral bracts linear-lanceolate. Flowers small, fleshy; pale green with a white lip, with spreading or reflexed segments. Dorsal sepal ovate-elliptic ("oblong"), acute or acuminate, about 9 mm. long. Lateral sepals somewhat longer, very obliquely oblanceolate-oblong, acute or acuminate. Petals linear, acute, almost as long as the sepals. Lip adnate to the column up to its apex; lamina ovate in outline, lightly 3-lobed, about 4 mm. long and 2.5 mm. wide; lateral lobes semiorbicular; mid-lobe larger, ovate, obtuse or subacute; disc at the base on each side with a cucullate-incurved thickening and a short callus in each depression of the thickening. Column stout, terminating in a pair of lobulate auricles.

Cajamarca: Eastern slopes of the Cordillera of Tabaconas, 2400 meters, *Weberbauer 6298.*

No specimen of this species was accessible.

Epidendrum paniculatum Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 243. 1798. Ames, Hubb. & Schweinf. Bot. Mus. Leafl. Harvard Univ. 2: 67. 1934. *Epidendrum floribundum* HBK. Nov. Gen. & Sp. 1: 353 (Quarto ed.), 283 (Folio ed.), t. 86. 1816. *Epidendrum laeve* Lindl. Bot. Reg. 30, Misc. 24, no. 33. 1844. *Epidendrum paniculatum* Ruíz & Pav. (B) *longicrure* Lindl. Fol. Orch. Epidendrum 56, no. 174. 1853. *Epidendrum paniculatum* Ruíz & Pav. (C) *cuspidatum* Lindl. Fol. Orch. Epidendrum 56, no. 174. 1853. *Epidendrum syringaeflorum* Warsc. ex Reichb. f. Bonpl. 2: 111. 1854 (nomen). *Epidendrum turialvae* Reichb. f. Gard. Chron. (1871) 1678; Schltr. Fedde Repert. Beih. 17: 42. 1922 (as "*Turialbae*"). *Epidendrum Englerianum* Lehm. & Kränzl. Engler Bot. Jahrb. 26: 466. 1899. *Epidendrum frons bovis* Kränzl. Fedde Repert. 1: 181. 1905. *Epidendrum ionodesme* Schltr. Fedde Repert. Beih. 7: 134. 1920; Mansf. Fedde Repert. Beih. 57: t. 47, nr. 182. 1929. *Epidendrum longicrure* Schltr. Fedde Repert. Beih. 7: 137. 1920; Mansf. Fedde Repert. Beih. 57: t. 48, nr. 186. 1929. *Epidendrum macroceras* Schltr. Fedde Repert. Beih. 7: 138. 1920; Mansf. Fedde Repert. Beih. 57: t. 48, nr. 187. 1929. *Epidendrum atacazoicum* Schltr. Fedde Repert. Beih. 8: 67. 1921; Mansf.

Fedde Repert. Beih. 57: t. 86, nr. 334. 1929. *Epidendrum bifalce* Schltr. Fedde Repert. Beih. 8: 67. 1921; Mansf. Fedde Repert. Beih. 57: t. 116, nr. 457. 1929. *Epidendrum caloglossum* Schltr. Fedde Repert. Beih. 8: 68. 1921; Mansf. Fedde Repert. Beih. 57: t. 86, nr. 336. 1929. *Epidendrum Isthmi* Schltr. Fedde Repert. Beih. 17: 34. 1922.

Plant extremely variable both vegetatively and florally, up to 2 meters or more tall including the inflorescence, terrestrial or epiphytic. Stems simple, caespitose, erect or suberect, slender to stout, entirely concealed by close, tubular sheaths which are scarious and leafless near the base and leaf-bearing above. Leaves distichous, several to numerous, linear-lanceolate to oblong-elliptic or oval (rarely ovate), acute to long-acuminate and sometimes cuspidate, clasping at the more or less narrowed base, submembranaceous to subcoriaceous, 4–25 cm. long, 0.5–6.8 cm. wide. Inflorescence terminal, commonly paniculate (rarely racemose), usually much exceeding the leaves, though rarely much surpassed by them, loosely few-flowered to loosely or densely many-flowered; peduncle from almost wanting up to 18 cm. long, either naked or clothed with 1 to 5 spathes or spathaceous bracts which are up to 9 cm. long. Bracts subtending the inflorescence very variable, small and inconspicuous to large and spreading, up to 7 cm. long. Floral bracts small, lanceolate to ovate, acute to long-acuminate. Flowers very variable in size, with more or less reflexed segments. Sepals green to white, yellow or rose, lip commonly white to yellowish. Dorsal sepal oblong-oblanceolate, cuneate-spatulate or narrowly elliptic, 8.2–16 mm. long, subacute to subacuminate. Lateral sepals about equally long but a little wider than the dorsal sepal, oblong-oblanceolate, oblong-spatulate to rarely oblong-elliptic, more or less oblique, subacute to subacuminate. Petals filiform to oblong-spatulate, obtuse to acute, nearly as long as the sepals when expanded. Lip adnate to the column up to its apex; lamina ranging from nearly simple to 3- or 4-lobed, transversely obtriangular to subquadrate or subrotund in outline, 3.5–9 mm. long, 5.8–12 mm. wide across the lateral lobes; lateral lobes very variable, dolabriform to obliquely ovate, obliquely oval, subrectangular or falcate-oblong, commonly cordate at the base, subentire to lobed or somewhat lacerate (*E. Isthmi*) on the outer margin; mid-lobe variable, sessile or subsessile, broadly truncate-cuneate to long-bilobulate above, either truncate-retuse or apiculate, with the lobules (V-shaped or transverse in divergence) ranging from linear or falcately linear-oblong to narrowly triangular, oblong or narrowly rectangular; disc at the base with 2 more or less lamellate and distinct calli, and in front 3 more or less developed, approximate, fleshy ridges. Column slender below, clavate-dilated above in front, terminating on each side in a more or less developed tooth.

Ayacucho: Aina, between Huanta and Río Apurimac, 750–1000 meters, terrestrial in thickets, *Killip & Smith 22542.*—Cajamarca: Cedrobamba, Valle de San Miguel, 2260 meters, *Herrera 2042.*—Cuzco: Prov. of Calca, Lares Valley between Huallhuayoj and Calca, 1800–1900 meters, border of shrubwood, *Weberbauer 7925.* Prov. of Convención, Machu-Picchu, 2000 meters, on clay bank with roots in loose humus, *Stork, Horton & Vargas 10401.* Prov. of Convención, Potrero, Cosqueñayocc, 1350 meters, in forest humus, *Vargas 8265.* Prov. of Convención, upper valley of Río Sambray (western affluent of the Vilcanota), 1800 meters, terrestrial along trail in the open, *Mexia 8071*. Prov. of Quispicanchis, Ttío to Murayaca, Marcapata, 2000 meters, among rocks, *Vargas 3762*. Prov. of Quispicanchis, Cadena, Marcapata, 1100 meters, in woods, *Vargas 4584*. Prov. of Urubamba, Machu-Picchu, 2100 meters, *Vargas 3334*. Prov. of Urubamba, "Huiñaihuaina," 2550 meters, in forest, *Vargas 4111*.—Huánuco: Prov. of Huánuco, Tingo María, epiphyte in forest, *Asplund 12468*. Prov. of Huánuco, margin of Río Monzón near Tingo María, 700–800 meters, in tropical forest, *Ferreyra 4236*. Muña, on trees and rocks in woods, *Pavón s.n.* (type). Pampayaco (Pampayacu), hacienda at the mouth of Río Chinchao, about 1070 meters, in dense forest, *Macbride 5119*. Pozuzo, about 600 meters, terrestrial, *Macbride 4603*.—Junín: Chanchamayo Valley, 1200 meters, *Schunke s.n.* Same data, (buds), *Schunke 1805*. Colonia Perene, about 680 meters, at the base of trees and epiphyte in dense forest, *Killip & Smith 25039, 25078, 25088*. Colonia Perene, along Río Perene, near "Hacienda 3," about 600 meters, epiphyte in forest, *Killip & Smith 25126*. East of Quimirí Bridge, near La Merced, 800–1300 meters, in dense forest, *Killip & Smith 23928, 25409*. Huacapistana, about 1800 meters, in densely forested valley, *Killip & Smith 24312*. Huacapistana, 1800–2400 meters, in thickets and open woods, *Killip & Smith 24512*. San Ramón, 900–1300 meters, epiphyte in dry woods, *Killip & Smith 24763*. Prov. of Tarma, Utcuyacu, 1900 meters, epiphyte in moist shady forest among chusqueas, *Woytkowski 35379*.—Loreto: Pumayacu, between Balsapuerto and Moyobamba, 600–1200 meters, epiphyte in forest, *Klug 0.10, 0.11, 0.17*. Río Huallaga Cañon, below Río Santo Domingo, about 1200 meters, in dry open woods, *Macbride 4256*. Vicinity of Iquitos, 100 meters, epiphyte beside river, *Klug 10070, 10090*.—San Martín: San Roque, 1350–1500 meters, in forest, *Williams 7732*.

This widespread and polymorphic species extends from Mexico and Central America (type of *E. turialvae* and *E. Isthmi*) to Colombia (type of *E. laeve*, *E. ionodesme*, *E. longicrure* and *E. macroceras*), Venezuela, Ecuador (type of *E. Englerianum*, *E. atacazoicum*, *E. bifalce* and *E. caloglossum*), Peru (type of *E. floribundum*, *E. paniculatum* and its varieties and *E. frons bovis*) and Bolivia, fide Schlechter.

Epidendrum paniculatum Ruíz & Pav. var. **linearifolium** (Cogn.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 105. 1943. *Epidendrum parviflorum* Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 245. 1798; Lindl. Fol. Orch. Epidendrum 48, no. 152. 1853. *Epidendrum gratiosum* Reichb. f. Bonpl. 4: 215. 1856; Cogn. Martius Fl.

Bras. 3, pt. 5: 165. 1898. *Epidendrum gratiosum* Reichb. f. var. *linearifolium* Cogn. Martius Fl. Bras. 3, pt. 5: 166. 1898. *Epidendrum patulipetalum* Schltr. Fedde Repert. Beih. 9: 91. 1921; Mansf. Fedde Repert. Beih. 57: t. 120, nr. 472. 1929.

Plant differs from *Epidendrum paniculatum* in being very slender, with membranaceous leaves. Leaves vary from elliptic-oblong to linear-lanceolate, acute to long-acuminate, up to 13 cm. long and 10 mm. wide. Flowers much smaller than those of *E. paniculatum*, with sepals about 5 mm. or less long. Moreover, the lip has commonly a trilobulate callus (not a bilobed callus or 2 separate calli) at the base.

Peru: Jambrasbamba, *Mathews 1900*.—Huánuco: Muña and Chaclla, mountains and weedy places, on trees and rocks, *Pavón s.n.* (type of *E. parviflorum*). Near Cuchero (Cochero), *Poeppig 1603* in part (type of *E. gratiosum* var. *linearifolium*).—Loreto: Near Moyobamba, *Filomeno s.n.* (type of *E. patulipetalum*).

Epidendrum paniculatum Ruíz & Pav. var. **unguiculatum** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 107. 1943.

Plant differs from *Epidendrum paniculatum* in its stout stems (1 cm. in diameter at the base); in the elongate peduncle (about 22 cm. long) with 4 strict, conduplicate spathes; in the larger flowers (sepals 18–20 mm. long); in the dolabriform, irregularly lobulate lateral lobes of the lip; and in the prominently unguiculate, quadrate base of the mid-lobe.

Loreto: Mishuyacu, near Iquitos, 100 meters, epiphyte in forest beside river, *Klug 1401*.

Epidendrum parvilabre Lindl. Benth. Pl. Hartw. 150. 1844; Fol. Orch. Epidendrum 33, no. 102. 1853.

Plant medium-sized, with an abbreviated rhizome. Stems approximate, pseudobulbous-thickened, narrowly cylindric, unifoliate, up to 6.5 cm. long. Leaf "oblong" or elliptic-oblong, rounded-obtuse and lightly bilobulate at the apex, up to 9.2 cm. long and 2.7 cm. wide, erect. Inflorescence solitary, much surpassing the leaf, arcuate above, with 3 close, imbricating spathes at the base, densely many-flowered above. Floral bracts minute, triangular. Flowers very small, with spreading segments. Dorsal sepal about 7 mm. long, oblong-oblanceolate, obtuse or subacute. Lateral sepals broader, obliquely oblong-obovate. Petals linear-oblanceolate, much narrower than the dorsal sepal. Lip adnate to the column up to its apex, slightly exceeding the sepals; lamina deeply 3-lobed; lateral lobes falcate-semiovate and porrect-spreading, very acute; mid-lobe from a ligulate basal portion dilated into a cuneate, truncate, 3-lobulate apex; disc bicallose at the base, with a thickened central line extending beyond the middle. Column dilated above.

Peru: Near "El Porotillo and El Sisme," *Hartweg s.n.*

This orchid, judging by its associated species, is very likely Ecuadorian in origin, but I have not been able to check the cited habitat.

The above diagnosis was compiled with the aid of a record of the type bearing a floral analysis.

Epidendrum Philippii Reichb. f. Linnaea 22: 840. 1849; Lindl. Fol. Orch. Epidendrum 82, no. 260. 1853.

Plant small. Stem arcuate, branched, mostly concealed by loose, tubular or infundibuliform leaf-sheaths. Leaves several to numerous, distichous, spreading, oblong-elliptic, acute, up to about 3.5 cm. long and 1.6 cm. wide. Inflorescence short, erect, racemose, loosely several- (about 8-) flowered, about 4 cm. long. Floral bracts lanceolate, spreading, exceeding the pedicelled ovaries. Dorsal sepal oblong-ovate, acute. Lateral sepals obliquely oblong-ovate, acute. Petals much shorter and narrower than the sepals, linear-oblanceolate, acute. Lip adnate to the column about to its apex; lamina suborbicular-ovate in outline, subtrilobed or sinuate-indented on each side above the middle, cordate at the base, emarginate at the apex, with the margins crenulate; disc with a pair of very small calli at the base. Column slender, dilated near the apex.

Peru: On the eastern slopes of the Cordillera (type).—Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 151. 1921.

This description was compiled from a careful examination of a record of *E. Philippii* from the Reichenbach Herbarium, supplemented by the type citation. There is no indication of the size of the flowers.

Epidendrum physopus Kränzl. Fedde Repert. 1: 87. 1905.

Plant slender, medium-sized, distichously branched. Stems diffuse or flexuous, entirely or mostly concealed by close, tubular leaf-sheaths, each branch bearing rather numerous, abbreviated, 2-leaved, floriferous, distichous branchlets. Leaves oblong-linear or "linear-lanceolate," acute and mucronate, clasping at the base, up to 2 cm. long and about 2.6 mm. wide, fleshy-coriaceous, spreading. Inflorescences short, arcuate or nodding, racemose, few- (about 5-) flowered above, with the rachis usually much shorter than the subtending leaf. Floral bracts narrowly lanceolate, acuminate, spreading, much shorter than the pedicellate ovaries. Flowers small, greenish yellow, with spreading segments. Dorsal sepal oblanceolate-oblong or "cuneate obovate," acute, up to 7 mm. long. Lateral sepals similar, oblique, acute or "obtuse." Petals oblanceolate-filiform, shorter than the dorsal sepal. Lip adnate to the column up to its apex; lamina transversely oblong, about 2.5 mm. long and 4 mm. wide, divided in front into 3 triangular, acute, subequal lobules; disc at the base with a pair of short-cylindric tubercles. Column arcuate, dilated in front above the middle. Ovary cylindric-dilated.

Junín: Prov. of Tarma, mountains of Yanangu, east of Huacapistana, in low, moist, mossy woods, *Weberbauer 2121.*

This description was prepared from an examination of a photograph of type material together with the citation.

Epidendrum pilosum C. Schweinf. Am. Orch. Soc. Bull. 11: 360, t. 10. 1943. Figure 91.

Plant rather small, epiphytic, about 23 cm. high. Pseudobulb narrowly ovoid-pyriform, monophyllous, about 3 cm. high. Leaf suberect, very narrowly linear, very fleshy, channelled, about 19.7 cm. long, up to 5 mm. wide. Inflorescence terminal, spreading, shorter than the leaf, bifurcate above, with loosely several-flowered branches, about 15 cm. high. Pedicellate ovary slender, verruculose. Flowers rather small, brownish green and yellow, with spreading segments. Dorsal sepal narrowly oblanceolate-oblong, subacute, about 13.2 mm. long. Lateral sepals equally long, oblong-oblanceolate, lightly oblique, acute. Petals spatulate-cuneate, abruptly acute, a little shorter than the sepals. Lip almost free from the column, slightly shorter than the sepals; lamina deeply 3-lobed; lateral lobes incurved and surpassing the column, obliquely ovate, obtuse at the slightly recurved apex; mid-lobe flat, obovate-suborbicular, truncate above with rounded, undulate lateral margins; disc with a broad pilose band terminating in a hairy bilobed callus, with the surface of the mid-lobe densely adorned with fleshy verrucose lines. Column lightly arcuate, about 7.5 mm. long, without distinct auricles above.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 779.*

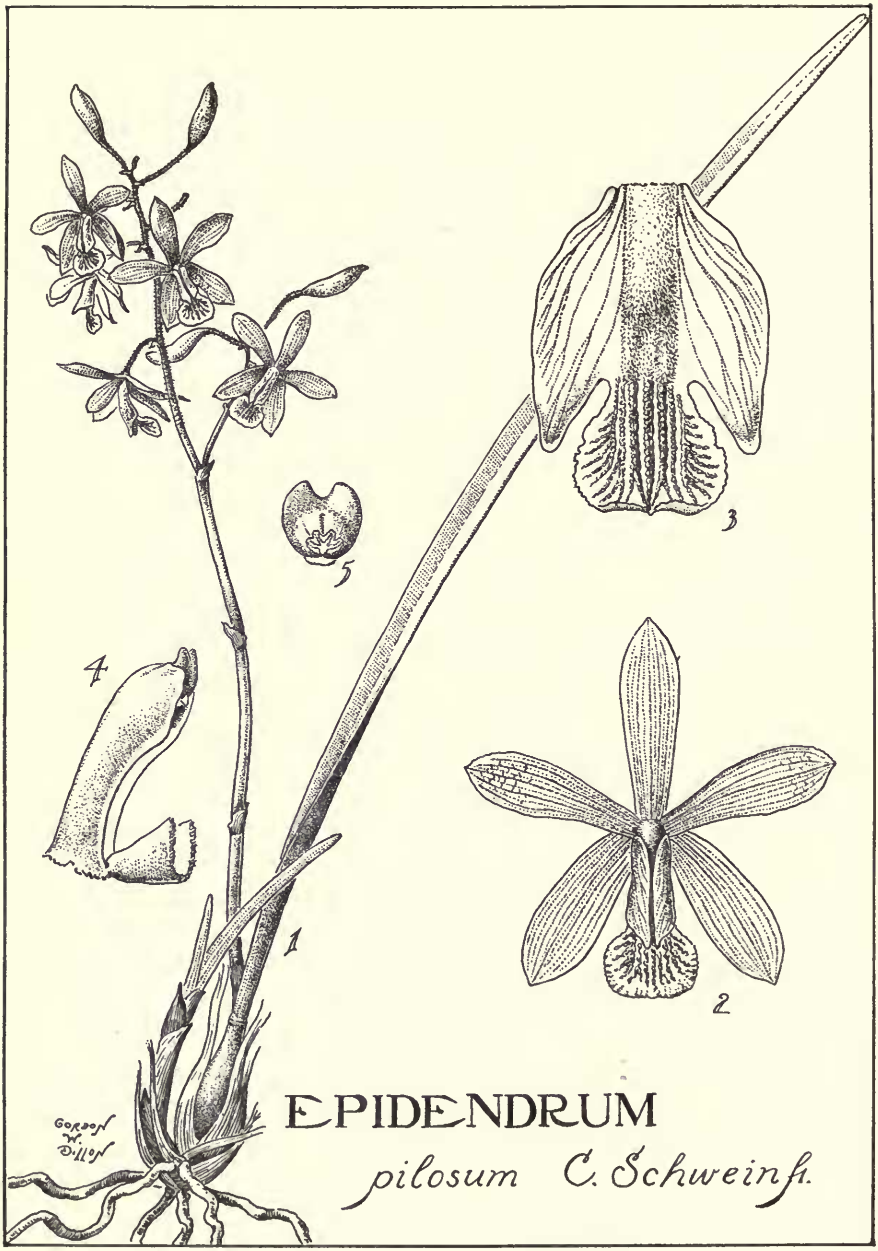
Epidendrum pleurobotrys Schltr. Fedde Repert. Beih. 9: 92. 1921; Mansf. Fedde Repert. Beih. 57: t. 121, nr. 474. 1929.

Plant tall, terrestrial, up to 200 cm. high, erect. Stems simple or occasionally with short lateral branches, entirely concealed by close, tubular leaf-sheaths. Leaves very numerous, distichous, spreading or recurved, linear to oblong-lanceolate, acute or acuminate (often with an apiculate apex), clasping at the base, up to 15 cm. long and 2.2 cm. wide. Inflorescences lateral and bursting from the leaf-sheaths, short, racemose, densely several-flowered and subcorymbose, arcuate or nodding, the abbreviated peduncle concealed by several imbricating, short, tubular sheaths. Floral bracts round-ovate, obtuse, concave, much shorter than the pedicelled ovary. Flowers small, white to sulphur-yellow, with spreading segments having strongly revolute sides. Dorsal sepal oval (when expanded), "elliptic," obtuse, about 10 mm. or less long. Lateral sepals similar but a little larger. Petals oblanceolate-oblong, obtuse to subacute, a little shorter than the dorsal sepal. Lip adnate to the column up to its apex; lamina simple, convex, reniform-suborbicular, cordate at the base, lightly retuse at the apex, up to 5.7 mm. long in the middle and about 9.2 mm. wide when expanded, minutely and irregularly crenulate; disc with a pair of small, fleshy calli at the base and a more or less prominent fleshy ridge through the middle. Column short, stout, more or less dilated upward in front, up to 6.8 mm. long.

Cajamarca: Eastern slope of the Cordillera above Tabaconas, 2200 meters, *Weberbauer 6306* (type).—Cuzco: Urubamba, Machu-Picchu, 2000 meters, on rocks, *Vargas 1890.* "Huiñaihuaina," 2550 meters, epiphytic, *Vargas 4128.*

Epidendrum polystachyum HBK. Nov. Gen. et Sp. 1: 352. 1816; Lindl. Fol. Orch. Epidendrum 31, no. 96. 1853.

Plant large, epiphytic, pseudobulbous. Pseudobulb narrowly ellipsoid to fusiform, several-jointed, concealed by evanescent sheaths, bearing 2 leaves at the summit, up to 31 cm. long. Leaves erect-spreading, elliptic-oblong, obtuse, clasping at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2
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EPIDENDRUM
pilosum C. Schweinf.
GORDON W. DILLON

FIG. 91. *Epidendrum pilosum* C. Schweinf. 1, plant; × 4/5. 2, flower; × 2. 3, lip, expanded; × 4. 4, column and base of lip; × 4. 5, anther from below; × 5.

the base, about 30 cm. or less long, 4.5 cm. or less wide, thickly coriaceous. Inflorescence terminal, erect or nearly so, up to more than 102 cm. high, entirely concealed by close, tubular, scarious, evanescent sheaths, at each joint with a short, simple to 3-branched, densely flowered, ascending raceme (the racemes subremote), with the rachis up to 6 cm. long. Floral bracts minute, ovate-triangular, acuminate, much shorter than the slender pedicellate ovary. Flowers small, yellow, submembranaceous, with spreading segments. Dorsal sepal cuneate-oblanceolate or oblong-obovate, acute, about 9.3 mm. or less long. Lateral sepals subequal or slightly larger, very obliquely semiobovate, falcate, acute, dorsally carinate near the apex. Petals similar to the dorsal sepal but narrower, spatulate-oblanceolate, acute or subacute, lightly oblique. Lip adnate to the column nearly to its apex; lamina deeply 3-lobed, transverse, subtruncate at the base, retuse at the apex, up to about 6 mm. long in the middle and 16 mm. wide across the lateral lobes; lateral lobes relatively large, obliquely dolabriform, with a crenulate-erose outer margin; mid-lobe much smaller than the lateral lobes and not protuberant beyond them, quadrate-obcordate or transversely subquadrate, deeply emarginate, with denticulate-erose margins to the lobules; disc with 2 complanate, dentiform calli at the base and with a thickened median ridge. Column gradually dilated above in front, terminating in a pair of transverse bilobulate auricles, about 8 mm. long.

Peru: Habitat not recorded, Charlesworth Shuttleworth & Company's collector (ex Herb. Kew).—Cajamarca and Junín, fide Schlechter, Fedde Repert. Beih. 9: 151. 1921. Also Colombia (type) and Ecuador.

Epidendrum Porpax Reichb. f. Bonpl. 3: 220. 1855, not 1865; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 240. 1944. *Epidendrum Mathewsii* Reichb. f. Linnaea 41: 81. 1876. *Epidendrum gnomus* Schltr. Fedde Repert. Beih. 9: 85. 1921; Mansf. Fedde Repert. Beih. 57: t. 142, nr. 558. 1929.

Plant small, epiphytic, with a profusely branching habit. Stems slender, divaricately branched, more or less entirely concealed by mostly scarious sheaths which are leaf-bearing above, with the lower portion producing roots, the upper branches up to 7.5 cm. long. Leaves distichous, linear-oblong to rarely elliptic-oblong, more or less distinctly separated, subacute and apiculate, up to 3.3 cm. long and (rarely) 9 mm. wide. Flowers solitary at the apex of the branches, large for the plant, variable in color (yellowish green, more or less suffused with brown or lavender, or pinkish white or purple), with the pedicel more or less concealed by a prominent, conduplicate spathe. Dorsal sepal elliptic-oblong to oblong-ovate, acute, up to 1.4 cm. long. Lateral sepals obliquely triangular-lanceolate, acute, with the base entirely adnate to the length of the column (and thus obliquely decurrent), about equaling the dorsal sepal or slightly larger. Petals linear or lanceolate-linear, acute, about as long as the dorsal sepal. Lip entirely adnate to the column up to its apex; lamina relatively large, suborbicular, sometimes more or less subquadrate or broadly obovate, commonly lightly retuse at the apex and rounded to cordate at the base; disc with 2 basal, fleshy calli and a more or less prominent, central thickened line, up to 1.3 cm. long and usually somewhat wider. Column very short and stout, dilated upward.

Amazonas: Chachapoyas, *Mathews s.n.* (type of *Epidendrum Mathewsii*).—Cuzco: Prov. of Convención, Aobamba to Huadquina, Amaibamba, 1450–1700 meters, *Vargas 8188*.—Junín: Chanchamayo Valley, 1000 meters, in open woods near La Merced, on tree trunks, *Weberbauer 1949* (type of *E. gnomus*).—Piura: Road from Piura to Huancabamba, El Tambo, about 3000 meters, epiphyte, *Scolnik 1403a*. Huancabamba, Quebrada de Chula, 2600 meters, terrestrial, *Scolnik 1438*. Also Mexico and Central America (type of *E. Porpax*), Venezuela and Colombia.

Epidendrum prostratum (Lindl.) Reichb. f. Gard. Chron. (1873) 289; Cogn. Martius Fl. Bras. 3, pt. 5: 112. 1898. *Physinga prostrata* Lindl. Bot. Reg. 24, Misc. 32, no. 45. 1838.

Plant small to medium-sized, epiphytic, with an abbreviated rhizome and caespitose stems. Stems widely spreading or prostrate, about 12 cm. or less long, entirely concealed by short, close, tubular, imbricating leaf-sheaths. Leaves several to numerous, distichous, widely spreading, linear-oblong or "narrowly ovate-lanceolate," acute or subacute, clasping at the base, up to 3.8 cm. long and about 8 mm. or less wide, thickly coriaceous with revolute margins. Inflorescence terminal, more or less elongate and exceeding the leaves, up to 22 cm. long, simple or several-branched at the floriferous apex, with the slender peduncle entirely concealed by close, tubular, evanescent sheaths. Racemes short, few-flowered, with a more or less fractiflex rachis. Flowers very small, white, greenish white, cream-colored or light purple, membranaceous, with a fleshy lip. Sepals shortly connate at the base. Dorsal sepal ovate or triangular-ovate, acuminate, about 7.8 mm. or less long. Lateral sepals subequal, slightly narrower, acuminate, dorsally carinate. Petals adnate to the sepals and about equally long, elliptic-linear or "triangular lanceolate," acute. Lip adnate to the column nearly up to its apex; lamina simple, reniform-suborbicular in outline or "obovate," cordate at the base, lightly emarginate and apiculate in front with the sides incurved, about 5 mm. or less long near the center and 8.2 mm. or less wide when expanded; disc with a pair of dentiform tubercles at the base and with a median fleshy ridge. Column short, denticulate above. Ovary with a prominent subspherical vesicle.

Loreto: Vicinity of Iquitos, 100 meters, epiphyte in clearing, *Klug 10030*. Also British Guiana (type), Colombia and Mexico.

This species appears to be very close to the Central American *E. physodes* Reichb. f., which has free sepals and petals, narrower petals, etc.

Epidendrum pubiflorum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 108, fig., 1943. Figure 92.

Plant apparently large and stout (lower part lacking in our specimen). Stem concealed by close, tubular leaf-sheaths. Leaves distichous, oblong or elliptic-oblong, bilobulate at the rounded apex, clasping at the base, up to 11.5 cm. long and 2.3 cm. wide, subcoriaceous. Inflorescence terminal, much exceeding the leaves, loosely paniculate with distichous, stout, arcuate branches which are rather densely many-flowered. Rachis, branches, ovaries, and outer surface of flowers finely pubescent. Floral bracts inconspicuous, lanceolate, acuminate, more or less shorter than the pedicelled ovary. Flowers rather small, with subspreading segments. Dorsal sepal oblanceolate-oblong or obovate-oblong, obtuse, up to 10 mm. long, concave. Lateral sepals obliquely elliptic-obovate, acute and prominently mucronate, a little longer and much wider than the dorsal sepal, concave. Petals linear-oblanceolate, about as long as the dorsal sepal, subacute. Lip adnate to the column up to its apex; lamina deeply 3-lobed, suborbicular in outline, cordate at the base, lightly retuse at the apex, about 7 mm. in greatest length and 9.5 mm. or less wide when expanded; lateral lobes spreading, obliquely dolabriform-ovate, obtuse, with the outer margins irregularly crenulate; mid-lobe subequal to the lateral lobes, shortly cuneate-obovate, lightly retuse with the lobules undulate-crenate; disc bicallose at the base with 3 approximate, fleshy ridges in front of the basal calli. Column short, strongly dilated upward in front just above the base, terminating in a pair of shallowly transverse-oblong auricles.

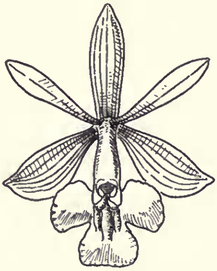


FIG. 92. *Epidendrum pubiflorum* C. Schweinf. Flower, expanded; × 1½.

Peru: Amazonian slope of the Andes, about 3000–3300 meters, *Ehle s.n.*

Epidendrum purum Lindl. Bot. Reg. 30, Misc. 75, no. 75. 1844; Fol. Orch. Epidendrum 90, no. 289. 1853.

Plant large, rather slender. Stems elongate-fusiform, apparently once-branched near the base, entirely concealed by close, tubular sheaths below, distichously 3- to 6-leafed above, about 23 cm. or more long. Leaves linear or linear-lanceolate, obtuse, clasping at the base, up to 22 cm. long and 1.6 cm. wide, ascending, coriaceous. Inflorescence terminal, loosely paniculate with 3–9 spreading, many-flowered branches. Flowers small, campanulate, pale green to lemon-yellow. Dorsal sepal linear-elliptic, shortly acuminate, about 9 mm. or less long. Lateral sepals obliquely semielliptic or narrowly lanceolate-elliptic, acuminate to a mucronate apex, a little larger than the dorsal sepal. Petals linear-filiform, acute, slightly broader toward the apex, a little shorter than the dorsal sepal. Lip adnate to the column up to its apex; lamina sharply 3-lobed, cordate at the base, acute at the apex, about 5.2 mm. or less long and subequally wide across the lateral lobes; lateral lobes obliquely ovate or aliform, acute; mid-lobe variable, ovate to linear-oblong, acute, porrect; disc with a pair of complanate calli at the base and 3 thickened ridges in front of these. Column short, dilated upward in front, terminating on each side in a transversely oblong auricle.

Peru(?), fide Schlechter, Fedde Repert. Beih. 9: 152. 1921. Also Venezuela (type), Colombia and Ecuador.

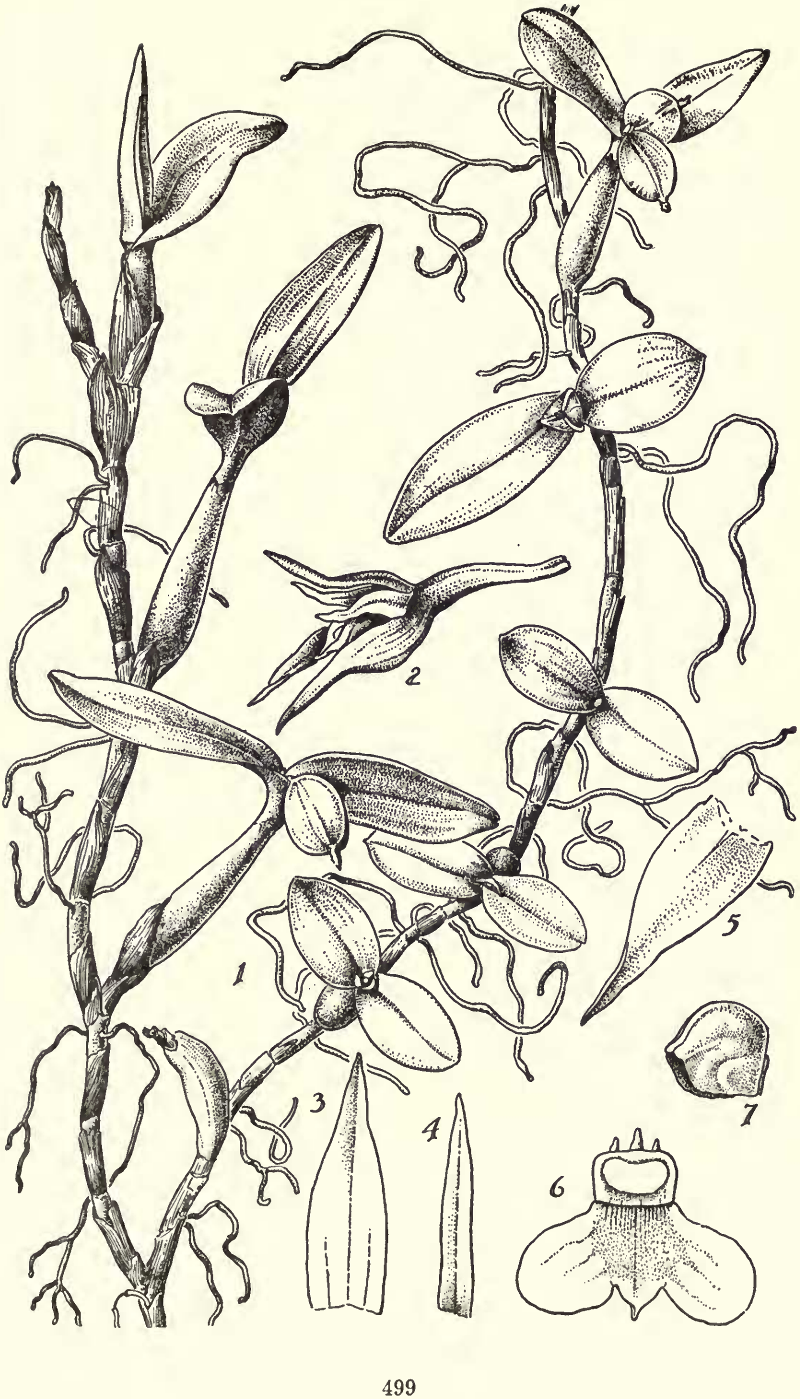
The above diagnosis was compiled from photographs of typical and authentic material and from an Ecuadorian collection referable to this species.

Epidendrum pygmaeum Hook. Bot. Mag. 60, t. 3233. 1833. *Coelogyne ? triptera* Brongn. Duperr. Voy. Coquille Phanerog. 201, t. 42, fig. A. 1834, not *Epidendrum tripterum* Sm., nor *E. tripterum* Lindl. *Epidendrum caespitosum* Poepp. & Endl. Nov. Gen. ac Sp. 2: 1, t. 101. 1837–38. *Epidendrum pygmaeum* Hook. Journ. Bot. 1: 49, t. 118. 1834. *Hormidium tripterum* Cogn. Martius Fl. Bras. 3, pt. 5: 29, t. 8, fig. 2. 1898. *Hormidium pseudopygmaeum* A. Finet, Bull. Herb. Boiss. 7: 121, t. 3. 1899. *Microstylis humilis* Cogn. Martius Fl. Bras. 3, pt. 6: 550, t. 114, fig. 3. 1906. Figure 93.

Plant small to medium-sized, epiphytic, very variable, with a long-creeping, sheathed, often branched rhizome. Pseudobulbs distant, ellipsoid to fusiform or cylindric (in the dried plant), clothed at the base or nearly throughout by several loose, evanescent, imbricating, broad sheaths, 2- to 3-leafed near the apex, about 10 cm. or less long. Leaves oval to linear, obtuse to acute and apiculate, clasping at the sessile base, rarely up to 14 cm. long and 1.9 cm. wide, coriaceous. Inflorescence terminal, abbreviated, racemose, 1- to few-flowered, subtended by 1 or 2 small membranaceous spathes. Flowers small, greenish and white or brownish green, sometimes tinged with yellow or lavender, fleshy, with widely spreading segments. Dorsal sepal lanceolate or ovate-lanceolate, strongly acuminate, about 11 mm. long or much less, rarely subcarinate. Lateral sepals obliquely lanceolate or ovate-lanceolate, long-acuminate, conspicuously carinate, more or less longer and wider than the dorsal sepal. Petals linear, acute or acuminate, distinctly shorter than the sepals. Lip adnate to the column up to the middle or above, sharply 3-lobed, much shorter than the sepals, up to 8.8 mm. long including the claw; lateral lobes suborbicular to oblong-oval, incurved and surrounding the apex of the column, slightly oblique; mid-lobe much smaller, porrect, shortly triangular, acuminate to rostrate-acuminate. Column short, stout, about 5.5 mm. or much less long, terminated by a prominent, incurved, triangular to linear-oblong tooth. Ovary prominently tripterous.

Huánuco, fide Schlechter, Fedde Repert. Beih. 9: 153. 1921.—Junín: Prov. of Tarma, Utcuyacu, 1900 meters, on tree in forest, *Woytkowski 35412*. A widespread and variable species, extending from Florida (U.S.A.), Central America (type of *Hormidium pseudo-*

FIG. 93. *Epidendrum pygmaeum* Hook. 1, fruiting plant; × ⅔. 2, flower from side; × 3. 3, dorsal sepal; × 4. 4, petal; × 4. 5, lateral sepal; × 4. 6, lip and column, front view, lip spread out; × 4. 7, anther cap, enlarged. Original drawing by Blanche Ames, redrawn by G. W. Dillon.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pygmaeum), through the West Indies to Peru (type of *Epidendrum caespitosum*), Brazil (type of *Coelogyne triptera, Epidendrum pygmaeum* and *Microstylis humilis*) and Bolivia.

Epidendrum ramosum Jacq. Enum. Pl. Carib. 29. 1760; Select. Stirp. Am. 221, t. 132. 1763; Ames, Hubb. & Schweinf. Bot. Mus. Leafl. Harvard Univ. 2: 45. 1934.

Plant epiphytic, very variable, upright, pendent or apparently creeping, simple or more commonly much branched. Stems caespitose from an abbreviated rhizome, slender to rather stout, often flexuous, 12–90 cm. tall or long, entirely concealed by close, tubular sheaths which are leaf-bearing except at the base of the stem or branches. Branches variable in length and number, either erect-spreading or decurved. Leaves numerous, distichous, linear, linear-oblong to oblong-elliptic, unequally bilobed at the apex, clasping at the base, 0.9–13.5 cm. long, up to 1.4 cm. wide. Inflorescence terminal at the apex of the stem or branches, 2- to several-flowered, commonly lax and arcuate, often with a fractiflex rachis. Floral bracts variable, more or less conspicuous, broad, concave-conduplicate, rounded to subacute, commonly equaling or exceeding the pedicellate ovary. Flowers small, greenish, white, cream-color or yellowish (rarely pinkish), very variable in size and form. Sepals, especially the laterals, more or less carinate at the apex. Dorsal sepal oblong-lanceolate to oblong or elliptic-oblong, acuminate to obtuse, 4.5–13 mm. long. Lateral sepals similar but often slightly broader than the dorsal sepal, somewhat oblique. Petals linear to oblanceolate-linear, subequally long or slightly shorter than the sepals, acute to broadly obtuse. Lip adnate to the column up to its apex, about equaling the sepals; lamina ovate to triangular-ovate or ovate-lanceolate, cordate or subcordate at the base, acuminate to rounded at the apex, 4–9 mm. long and 2–5.5 mm. wide across the base; lamina at the base with a V-shaped callus which is more or less extended toward the apex. Column short and stout, dilated upward in front, retuse in the middle of the back.

Junín: Chanchamayo Valley, 1800 meters, *Schunke 507*. Same locality, 1500 meters, *Schunke 1292, 1333*. La Merced, Hacienda Schunke, about 1200 meters, in montaña, *Macbride 5756*. Pichis Trail, San Nicolas, about 1100 meters, in dense forest, *Killip & Smith 26058*. Pichis Trail, Yapas, 1350–1600 meters, in dense forest, *Killip & Smith 25607*. A widespread and variable species extending from Mexico to Panama and from the West Indies (type) to Venezuela, Brazil and Peru.

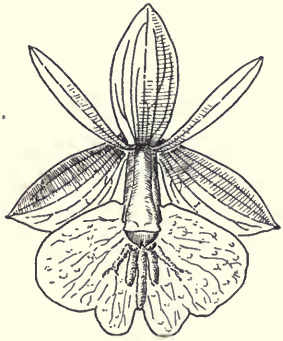
Epidendrum raphidophorum Lindl. Fol. Orch. Epidendrum 52, no. 164. 1853.

Plant epiphytic, large and robust, up to 1 meter high (according to collector's notes). Stem stout, terete below where sometimes once-branched, ancipitous-dilated above, entirely concealed by tubular, sometimes evanescent sheaths which are leaf-bearing except toward the base. Leaves distichous, apparently 6–7, spreading, elliptic-oblong to elliptic, obtuse, deeply clasping at the base, up to 22 cm. long and 3.9 cm. wide. Inflorescence terminal, more or less arcuate or nodding, racemose above, the peduncle bearing 1–3 large, imbricating, conduplicate spathes. Raceme up to 20 cm. long, rather densely many-flowered. Floral bracts acicular, more or less elongate. Flowers small, white to deep flesh-color. Dorsal sepal lanceolate-elliptic (or "oblong"), acuminate, about 1.3 cm. long. Lateral sepals a little longer and broader than the dorsal sepal, semielliptic or obliquely lanceolate-elliptic, more or less abruptly long-acuminate and carinate-thickened above. Petals linear or oblanceolate-linear, acute, slightly oblique, a little shorter than the dorsal sepal, with finely denticulate margins. Lip adnate to the column up to its apex, subequaling the sepals; lamina deeply 3-lobed, cordate at the base, sharply apiculate at the apex, almost 1 cm. wide across the lateral lobes; lateral lobes obliquely suborbicular-ovate, with minutely erose outer margins; mid-lobe oblong-subquadrate, somewhat dilated above with incurved sides, sharply apiculate; lamina bicallose at the base with a fleshy-thickened central portion. Column sigmoid when viewed from the side, abruptly dilated above the middle in front, about 9 mm. long, terminated on each side by a fleshy, transversely subquadrate auricle.

Huancavelica: Prov. of Tayacaja, Ampurco woods, Salcabamba–Surcubamba Trail, 2900 meters, on mossy tree trunk, *Stork & Horton 10424*. Venezuela (type).

The Peruvian collection differs from the type in having shorter, relatively broader leaves and shorter floral bracts.

FIG. 94. *Epidendrum rectopedunculatum* C. Schweinf. Flower, expanded; × 3.



Epidendrum rectopedunculatum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 110, fig., 1943. Figure 94.

Plant stout, epiphytic, about 52 cm. tall. Stem terete, strict, entirely concealed by close, tubular sheaths which are leaf-bearing except near the base. Leaves distichous, numerous, ovate-lanceolate (rarely oblong-ovate or oblong-elliptic), subacute to acuminate, clasping at the base, up to 8.8 cm. long and 2.4 cm. wide, fleshy, shining above, spreading. Inflorescence terminal, strict, about 11.3 cm. high, with the rachis closely invested by tubular, imbricating, evanescent sheaths, provided above with remote, abbreviated, widely spreading branches which are commonly short-branched and are densely flowered. Floral bracts minute, squarrose, triangular-ovate. Flowers small, subfleshy, mignonette and flesh-red, with spreading segments. Dorsal sepal obovate-elliptic, acute, about 7.6 mm. or less long. Lateral sepals obliquely elliptic-obovate, acute, somewhat larger than the dorsal sepal. Petals oblanceolate-linear, subacute to retuse, a little shorter than the sepals. Lip adnate to the column up to its apex; lamina fleshy, transversely oval in outline, abruptly bilobulate in the middle with 2 semiorbicular lobules, subtruncate at the base, up to 7 mm. long on either side of the center and 12.8 mm. wide; disc with a pair of subglobose calli at the base and 3–5 more or less distinct fleshy ridges in front. Column short and stout, gradually dilated upward in front, about 4 mm. or less long. Ovary with a semiellipsoid vesicle.

Loreto: Vicinity of Iquitos, 100 meters, in dense forest, *Klug 10083.*

Epidendrum reflexilobum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 112, fig., 1943. Figure 95.

Plant tall, rather slender. Stems erect from a short decumbent base, about 19 cm. or less long, entirely concealed by close, tubular sheaths which are leaf-bearing except at the base. Leaves distichous, 9 or less, ovate-oblong to oblong or elliptic-oblong (rarely ovate), rounded and minutely bilobed at the apex, clasping at the base, up to 5.5 cm. long and 1.5 cm. wide (much smaller below), apparently fleshy. Peduncle elongate, apparently strict, entirely concealed by numerous, close, tubular, scarious sheaths, about 43.5 cm. or more long. Raceme terminal, short, nodding, more or less densely several- to many-flowered, about 4 cm. or less long. Floral bracts narrowly triangular, long-acuminate, spreading, the lower ones much the longer. Flowers small, scarlet or crimson with yellow on the lip, the sepals and petals recurved. Dorsal sepal ovate-elliptic or elliptic-oblong, acute, up to 12.5 mm. long. Lateral sepals obliquely elliptic-oblong, acute with a dorsal mucro, carinate, a little larger than the dorsal sepal. Petals oblanceolate or cuneate-spatulate, acute, a little longer and narrower than the dorsal sepal. Lip adnate to the column up to its apex; lamina sharply 3-lobed, much surpassing the sepals and petals, cordate at the base; lateral lobes obliquely oval in outline, reflexed, irregularly lacerate-dentate at the rounded apex, concave at the base; mid-lobe much larger than the lateral lobes, obovate-oblong in outline including the subquadrate claw, deeply bilobed with porrect, more or less equal lobules which are irregularly lacerate in front; disc with 3 short, fleshy keels of which the central one is longest, the lateral ones at their fleshy lobulate base spreading onto the lateral lobes. Column short and stout, lightly dilated upward in front, extended on each side into an erect denticulate auricle.

Huánuco: Yanahuanca, about 3070 meters, on rocks among shrubs, *Macbride & Featherstone 1290* (type).—Junín: Prov. of Cerro, Huariaca, about 3200 meters, on shrubby slope, *Asplund 11966.*

Epidendrum refractoides C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 114, fig., 1943. Figure 96.

Plant robust, epiphytic, about 57.4 cm. or more high. Stem erect, lightly flexuous, entirely concealed by loose, imbricating, infundibuliform sheaths which are leaf-bearing except at the very base, about 23 cm. high. Leaves distichous, about 8, oval to oblong-elliptic, broadly rounded with a minute apicule at the apex, deeply clasping at the base, up to 12 cm. long and 4.2 cm. wide (often progressively shorter below), chartaceous. Inflorescence terminal, arcuate, about 48 cm. or less long, loosely paniculate with appressed, short branches; peduncle up to 14 cm. long, entirely concealed by 3 strict, conduplicate, lanceolate spathes; branches of the panicle in the lower part of the inflorescence, loosely 3- to 5-flowered, subtended by a loose infundibuliform spathe similar to those on the peduncle. Flowers small, green, fleshy. Dorsal sepal obovate-oblong, truncate-obtuse with a dorsal mucro, about 11 mm. long. Lateral sepals slightly larger than the dorsal sepal, obliquely oblong-obovate, acute and dorsally mucronate. Petals linear-oblanceolate, broadly obtuse. Lip adnate to the column up to its apex; lamina ovate-quadrate in outline, deeply cordate at the base, simple or obscurely 3-lobed (lightly indented in the middle of each side), lightly retuse-apiculate in the middle of the truncate apex, irregularly crenate-dentate especially in the middle of each side, about 7.8 mm. in greatest length and 9 mm. in greatest width; disc with 2 prominent, fleshy, complanate calli at the base, and 3–5 fleshy ridges in front. Column short, stout, strongly dilated upward in front, crenate-dentate at the truncate apex.

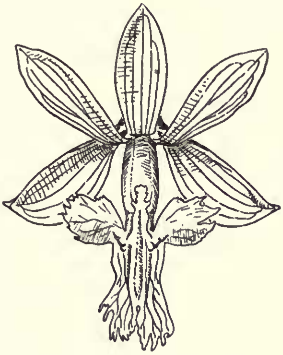


FIG. 95. *Epidendrum reflexilobum* C. Schweinf. Flower, expanded; × 1½.

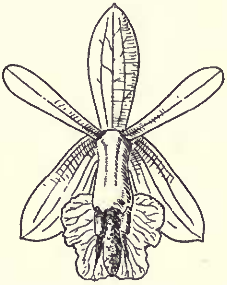


FIG. 96. *Epidendrum refractoides* C. Schweinf. Flower, expanded; × 1½.

Huánuco: Cani, 7 miles northeast of Mito, about 2600 meters, "in dense stream-wood," *Macbride 3391*.

Epidendrum refractoides C. Schweinf. var. **humile** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 13. 1953.

This variety is distinguished from the species by its lower stature, its naked or 1-sheathed peduncle, its racemose inflorescence and its distinctly 3-lobed lip.

Plant small, stout, epiphytic, up to about 19 cm. high. Stems (sometimes decumbent at the base) stout, entirely concealed by imbricating leaf-sheaths (or fibres of sheaths) about 10 cm. long. Leaves up to 11, approximate, elliptic-ovate, obtuse to rounded at the apex, sessile and clasping at the base, up to 5.1 cm. long and 2.5 cm. wide, ascending-spreading. Inflorescence solitary, terminal, racemose, erect, about 9.5 cm. or less tall; peduncle short, up to about 4 cm. long, usually bearing a conspicuous, conduplicate, erect spathe about 2.5 cm. long; raceme rather loosely several- (7- or more) flowered, with the rachis up to 6 cm. long. Flowers rather small, more or less fleshy, greenish yellow. Dorsal sepal lanceolate-elliptic or elliptic-oblanceolate, complicate and apiculate at the apex, 11–12.2 mm. long. Lateral sepals obliquely and broadly lanceolate-elliptic, acute, dorsally carinate, obliquely inserted at the base of the column, about equaling the dorsal sepal. Petals oblanceolate or linear-oblanceolate, obtuse to subacute, slightly shorter and much narrower than the sepals. Lip adnate to the column up to its apex; lamina 3-lobed with the lateral lobes upcurved, cordate at the base, about 6–6.5 mm. long in the center and 8–10.2 mm. wide across the lateral lobes when expanded; lateral lobes suborbicular-oval, with irregular or lobulate margins; mid-lobe distinct, elliptic-subquadrate, truncate and lightly retuse in front, with the center longitudinally thickened; disc at the base with a pair of complanate, obliquely semiobovate calli. Column short and stout, dilated above in front, about 6.5–7 mm. high at the back.

Apurimac: Prov. of Abancay, "bosques de Ampay," epiphyte, *Vargas 2050* (type).—Cuzco: Prov. of Calca, in the vicinity of the town of Lares, on rocks, 3200 meters, leaves purplish, *Vargas 3618.*

Epidendrum rigidiflorum Schltr. Fedde Repert. Beih. 19: 127. 1923.

Plant large, shrubby, terrestrial or epiphytic, up to 120 cm. high. Stem simple or usually loosely branching (commonly divaricately so), entirely concealed by close, tubular, more or less rugulose sheaths which are leaf-bearing except at the base of the stem and branches. Leaves numerous, distichous, lanceolate to oblong-lanceolate (rarely elliptic-lanceolate), acute to acuminate, clasping at the base, spreading, more or less coriaceous, up to 15 cm. long and 2.6 cm. wide. Inflorescence terminal, erect or irregularly arcuate, about 21 cm. or less long, loosely racemose and several- to many-flowered above, with a short naked peduncle. Floral bracts conspicuous, ovate-lanceolate (rarely ovate), spreading, equaling or surpassing the pedicelled ovary. Flowers small to medium-sized, fleshy, rigid when dry, green, brownish green or whitish, often tinged with dull lavender, with spreading or reflexed segments. Dorsal sepal elliptic-lanceolate or "oblong," acute, up to 1.4 cm. long. Lateral sepals obliquely elliptic-ovate or elliptic-lanceolate ("oblong"), acute or acuminate, slightly longer and broader than the dorsal sepal, subcarinate. Petals elliptic-linear, acute, shorter than the dorsal sepal. Lip adnate to the column about to its apex; lamina concave-conduplicate, simple, broadly triangular, deeply auriculate-cordate at the base, acute or acuminate above, up to 9.5 mm. long in the middle and rather broader at the base when expanded; disc naked. Column very short and stout, strongly dilated upward in front, terminating on each side in a prominent upcurved tooth.

Cuzco: Prov. of Convención, Hacienda Potrero, Sapan-Sachayocc, 2200 meters, epiphyte in forest, *Vargas 2532.* Prov. of Paucartambo, eastern slope of the Andes above Cosñipata, 2000–2100 meters, *Weberbauer 6967.*—Huánuco: Between Huánuco and Pampayaco (Pampayacu), *Kanehira 334* (branches strict, leaves small). Carpish Pass, 84 km. from Tingo María on highway to Lima, about 2750 meters, *Allard 21104.* Also Costa Rica (type), Venezuela and Colombia.

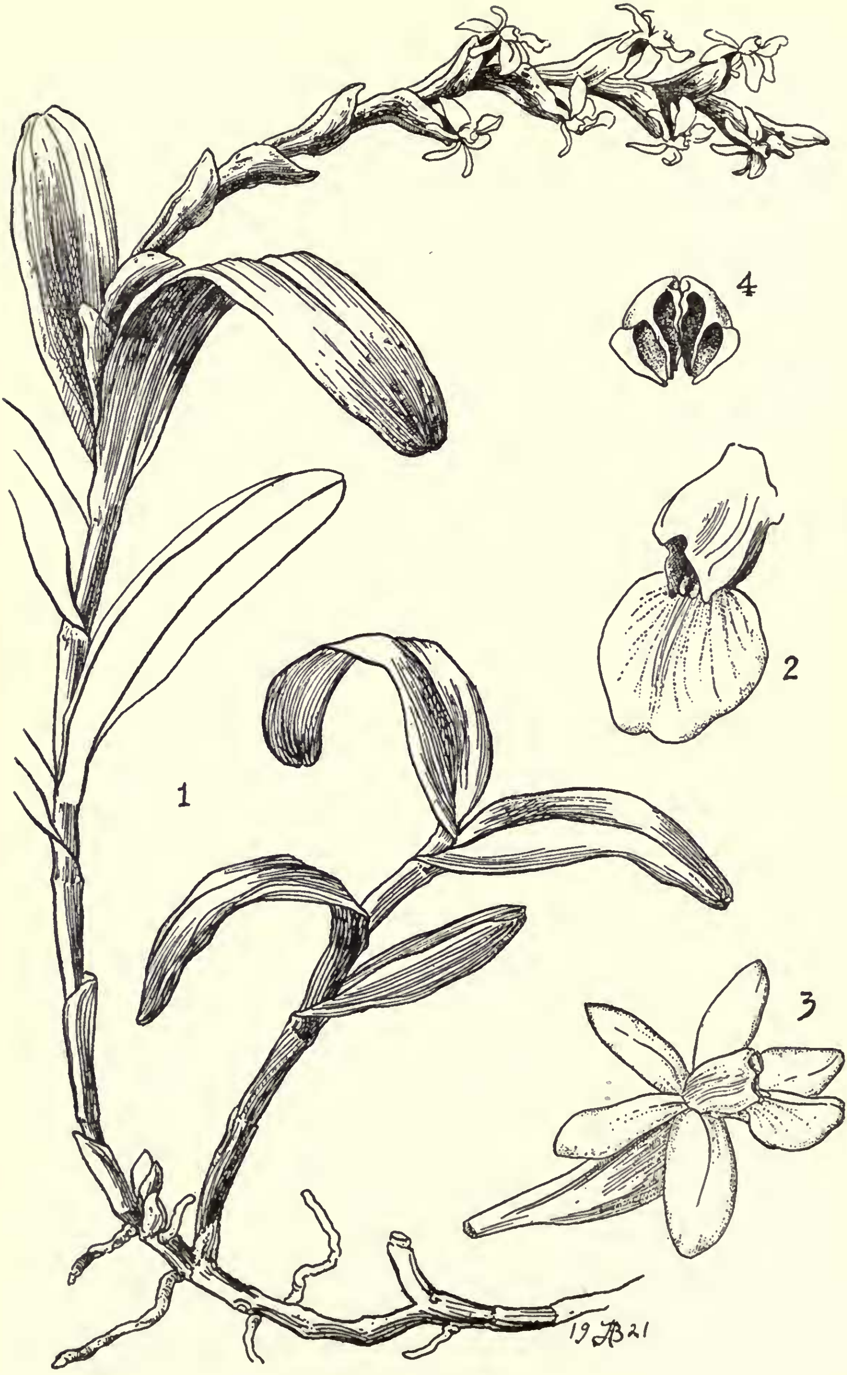
Epidendrum rigidum Jacq. Enum. Pl. Carib. 29. 1760; Select. Stirp. Am. 222, t. 134. 1763; Cogn. Martius Fl. Bras. 3, pt. 5: 171. 1898. Figure 97.

Plant more or less robust, epiphytic, with a long-creeping and often branching, loosely sheathed rhizome. Stems erect, ascending or arcuate, simple, approximate to subremote, up to 20 (rarely 30) cm. high, entirely concealed by tubular sheaths which are leaf-bearing except in the lower portion, strongly complanate above. Leaves loosely distichous, 1–11, spreading, linear-oblong to oblong-elliptic or oval, broadly rounded or lightly bilobed at the apex, clasping at the base, coriaceous, up to 8.5 (rarely 12.5) cm. long, 1–2.5 cm. wide. Inflorescence terminal, erect or arcuate, up to 16 cm. long, distichously racemose nearly to the base, laxly or subdensely few- to many-flowered, with a bialate, more or less flexuous rachis. Floral bracts large and conspicuous, equitant, dorsally carinate, obtuse, surpassing the flower or equaling the ovary in course of development, up to 25 mm. long. Flowers very small, rigid-fleshy, green to yellowish. Dorsal sepal ovate-oblong or elliptic-oblong, subacute, up to 8.4 mm. long (rarely). Lateral sepals obliquely oblong-ovate or elliptic-ovate, a little larger than the dorsal sepal. Petals linear or oblanceolate-linear, acute or obtuse, a little shorter than the dorsal sepal. Lip adnate to the column up to its apex, subequaling the lateral sepals; lamina simple, broadly ovate to suborbicular, strongly cordate at the base, obtuse (rarely subtruncate or acute) at the apex, up to 6 mm. long; disc bicallose at the base with a more or less conspicuous thickened median line. Column short, stout, dilated upward in front, up to 4 mm. long.

Cuzco: Prov. of Convención, Sahuayaco, 900 meters, on slopes, *Vargas 1818.*—San Martín: San Roque, 1350–1500 meters, *Williams 7525.* Zepelacio near Moyobamba, 1200–1600 meters, in mountain forest, *Klug 3597.* A widespread and rather variable species extending from Florida (U.S.A.) and Mexico through Central America and the West Indies (type) to Colombia, Venezuela, the Guianas, Brazil and Bolivia.

Epidendrum Rondosianum C. Schweinf. Rev. Acad. Colomb. Ciénc. Exact. Físic. y Natur. 5: 351. 1943.

Plant epiphytic, medium-sized, sometimes exceeding 37 cm. in height. Stem fusiform, about 15 cm. or more long, entirely concealed by imbricating sheaths which are scarious and non-leaf-bearing below and leaf-bearing and usually foliaceous above. Leaves distichous, 8 or less, subapproximate above, oblong-lanceolate to oblong (rarely ovate-oblong), obtuse, slightly narrowed to a clasping base, up to 17 cm. long and 2.2 cm. wide, subcoriaceous, erect or ascending. Inflorescence terminal, suberect, racemose above, up to 27 cm. high; raceme many-flowered, dense or subdense above, very loose below, peduncle 1.5–8.2 cm. long, commonly with 2 small, remote, infundibuliform sheaths. Floral bracts small, spreading, ovate, acute, inconspicuous. Flowers small, pale yellow, subfleshy, with spreading segments. Pedicellate ovary and sepals shortly pubescent. Dorsal sepal obovate-oblong or elliptic-oblanceolate, acute or subacute, about 10 mm. long. Lateral sepals obliquely oblong-obovate, acute with a dorsal mucro, about as long as, but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a little wider than, the dorsal sepal. Petals linear-oblanceolate, subacute, shorter than the sepals. Lip adnate to the column up to its apex; lamina distinctly 3-lobed, deeply cordate at the base, about 5.3 mm. or less long in the middle to the retuse apex, 8.2–10 mm. wide across the expanded lateral lobes; lateral lobes obliquely rounded-dolabriform, with irregular outer margins; mid-lobe subquadrate-obovate, subequaling the lateral lobes; disc provided at the base with a callus consisting of about 7 approximate, irregular, pyriform or lobulate papillae. Column strongly dilated above in front, lobulate-retuse in the middle, on each side extended into a transverse-subquadrate, bilobulate wing.

This description is inclusive of additional material received since the type was described.

Apurimac: Prov. of Abancay, Mataró Ravine, 2600 meters, *Vargas 2325.*

Epidendrum rostrigerum Reichb. f. Linnaea 41: 38. 1876. *Epidendrum Bangii* Rolfe, Bull. N. Y. Bot. Gard. 4: 451. 1907.

Plant robust, epiphytic, up to 120 cm. tall. Stem simple or branched, entirely concealed by close, tubular sheaths which are finely rugulose and leaf-bearing. Leaves numerous, distichous, spreading, oval to oblong-elliptic or oblong-lanceolate, acute to obtuse, clasping at the base, up to 12.7 cm. long and 3 cm. wide, coriaceous and nervose. Inflorescence terminal, racemose, subdensely several- to many-flowered nearly to the base, 15 cm. or less long. Floral bracts ovate-lanceolate, acuminate, spreading, surpassing the pedicelled ovary. Flowers small, fleshy, greenish or greenish red. Dorsal sepal oblong-lanceolate, acute or acuminate, about 1.5 cm. or less long. Lateral sepals elliptic-lanceolate or ovate-lanceolate ("triangular"), acute or acuminate, carinate above, about equally long but broader than the dorsal sepal. Petals linear, acute or acuminate, slightly shorter than the dorsal sepal. Lip adnate to the column up to its apex; lamina very fleshy, concave-conduplicate, simple, embracing the upper part of the column, broadly triangular with a cordate-auriculate base, narrowed to an obtuse tip, about 1 cm. long in the middle and 1.6 cm. wide when expanded; disc naked but with a more or less conspicuous-thickened median base. Column very short and stout, dilated upward in front, terminating on each side in an upcurved, broadly semiovate auricle. Anther long-rostrate.

Huánuco: Tambo de Vaca, about 4000 meters, *Macbride 4897.*—Puno, fide Schlechter, Fedde Repert. Beih. 9: 152. 1921. Sachapata, on tree trunks, *Lechler 2690* (type of *E. rostrigerum*). Also Bolivia (type of *E. Bangii*).

Epidendrum Ruizianum Steud. Nomencl. Bot. ed. 2, pt. 1: 558. 1840. *Epidendrum nutans* Ruíz & Pav. Syst. Veg. Fl. Peruv. et

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FIG. 97. *Epidendrum rigidum* Jacq. 1, plant; × 1. 2, lip and column, front-side view; × 5. 3, flower, side view; × 3. 4, anther, enlarged. Drawn by Blanche Ames.

Chil. 1: 245. 1798, not Sw. 1788. *Epidendrum spathaceum* Lindl. Hook. Journ. Bot. 3: 85. 1841; Fol. Orch. Epidendrum 53, no. 166. 1853.

Plant large, growing on trees or rocks, base of plant not seen. Stem stout, entirely concealed by close, tubular, imbricating leaf-sheaths. Leaves oblong-elliptic to narrowly oblong, obtuse and minutely bilobulate at the apex, clasping at the base, coriaceous, erect-spreading, up to 24 cm. long and 3.5 cm. wide. Inflorescence terminal, strict below, nodding above, compound, consisting of several rather short, subremote, densely many-flowered racemes which are arcuate or pendent, the peduncle being entirely concealed by 3 or more appressed, imbricating, conduplicate, elongate spathes. Rachis provided with similar, elongate-falcate, conduplicate spathes subtending the racemes. Flowers small, white and pink. Dorsal sepal lanceolate-elliptic, about 10 mm. long. Lateral sepals strongly oblique, semielliptic, acute or acuminate, slightly larger than the dorsal sepal. Petals filiform, subacute, slightly shorter than the dorsal sepal. Lip adnate to the column up to its apex, distinctly surpassing the sepals; lamina sharply 3-lobed, cordate at the base, about 5 mm. long in the middle; lateral lobes aliform-semiovate, denticulate to sharp-dentate on the outer margin; mid-lobe porrect, oblong-subquadrate to ovate-oblong, obtuse or retuse and apiculate; disc with a pair of complanate calli at the base and with a fleshy-thickened median ridge. Column dilated in front, terminating in a pair of transverse, subquadrate auricles, about 6 mm. long to the apex of an auricle.

Huánuco: Muña and Chaclla (Chaglla), on trees and rocks in woods, *Pavón s.n.* (type of *E. nutans* and *E. spathaceum*). Also Colombia and Venezuela.

Epidendrum rupestre Lindl. Hook. Journ. Bot. 3: 84. 1841; Fol. Orch. Epidendrum 35, no. 108. 1853. *Epidendrum Penlandii* L. O. Williams, Bot. Mus. Leafl. Harvard Univ. 9: 9, t. 4, figs. 1–3. 1940.

Plant small, epiphytic or growing on rocks, up to 17.5 cm. tall. Rhizome abbreviated. Stems caespitose, cylindric or fusiform and more or less arcuate when dry, about 4 cm. or less long, obliquely bifoliate at the apex, invested by several loose, imbricating, membranaceous sheaths. Leaves lanceolate or elliptic-lanceolate, acute, clasping at the cuneate base, up to 8.5 cm. long and 1.4 cm. wide, coriaceous, ascending. Inflorescence terminal, erect or suberect becoming arcuate or pendent, loosely racemose above, about 13 cm. high; peduncle complanate, with 1 or 2 scarious, lanceolate, acuminate sheaths. Raceme loosely several- (up to 11-) flowered, with the rachis up to 6 cm. long. Floral bracts small, triangular-lanceolate, acuminate, much shorter than the pedicelled ovary. Flowers very small, yellow, or pinkish white and yellow, with spreading or reflexed segments. Dorsal sepal obovate-oblong, obtuse or subacute, about 7 mm. long. Lateral sepals similar but slightly broader than the dorsal sepal, obliquely obovate-oblong, acute at the dorsally carinate apex, with the base adnate to the column up to about one half of its length. Petals oblanceolate-linear, obtuse, slightly shorter than the sepals. Lip adnate to the column up to its apex, distinctly exceeding the sepals; lamina reniform in outline, distinctly 3-lobed, cordate at the base, about 4 mm. long in the middle and

7 mm. wide below, convex; lateral lobes suborbicular, irregularly denticulate on the outer margins, acute in front; mid-lobe subquadrate-rounded, broader than long, minutely denticulate at the truncate, often retuse, apex; disc fleshy-thickened in the center, with 3 stout, approximate, fleshy ridges. Column slender, slightly dilated above, about 6 mm. long, terminating in a shallow, transverse, subquadrate auricle on each side.

Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 152. 1921. Ecuador (type of *E. rupestre* and *E. Penlandii*).

Epidendrum sarcostalix Reichb. f. & Warsc. Bonpl. 2: 111. 1854.

Plant stout (lower portion lacking in the type). Stem stout, mostly concealed by loose, tubular, leaf-bearing sheaths. Leaves distichous, spreading, 9 or more, oval to elliptic ("oblong"), obtuse and apiculate at the apex, clasping at the base, up to 5 cm. long and 2.5 cm. or less wide, with cartilaginous margins. Raceme terminal, reflexed, about 8 cm. long, subdensely many- (about 12-) flowered above, with a short peduncle. Floral bracts very small, triangular-setaceous, much shorter than the pedicellate ovary. Flowers rather small, fleshy-chartaceous. Dorsal sepal oblong-obovate, acute, about 1.8 cm. long. Lateral sepals subequal but a little wider. Petals cuneate-oblanceolate, subacute. Lip adnate to the column up to its apex; lamina simple, deflexed, broadly ovate-triangular, replicate, cordate at the base, apparently about 8 mm. long and somewhat wider below when expanded, acute; disc with a pair of small rounded calli at the base. Column arcuate-clavate, dilated above in front, terminating in a pair of transverse, subquadrate ("obliquely rhombic") auricles. Ovary with a narrow, elongate sac.

Peru: Without exact locality, *Warscewicz s.n.*

This diagnosis has been prepared from a drawing, apparently from the type, in the Reichenbach Herbarium, supplemented by the type description.

Epidendrum saxicola Kränzl. (as *saxicolum*) Fedde Repert. 1: 187. 1905.

Plant rather low, with a stout, creeping rhizome. Pseudobulbs approximate (sometimes only 1 pseudobulb present), pyriform-subcylindric, clothed and surpassed by 2 or more broad scarious sheaths, unifoliate at the apex, up to 6.5 cm. long, strongly striate-rugose in the dried plant. Leaf erect, elliptic or elliptic-oblong, broadly obtuse and often bilobulate at the apex, clasping at the base, 6–12 cm. long, up to 2.5 cm. wide, thickly coriaceous. Inflorescence terminal, erect and often slightly arcuate above, somewhat shorter or longer than the leaf, 2- to 5-flowered near the apex; peduncle stout, more or less concealed by a large oblong, conduplicate spathe. Floral bracts minute. Flowers relatively large, with spreading or reflexed segments. Sepals and petals dull purple, lip milk-white suffused with purple, or the entire flower yellow or cream-colored. Dorsal sepal elliptic-oblong or lanceolate-oblong, acute or obtuse, about 1.5–1.7 cm. long. Lateral sepals similar but a little broader, very oblique at the base. Petals linear-oblanceolate or elliptic-oblanceolate, obtuse or subacute, a little shorter than the sepals. Lip adnate to the column up to its apex; lamina simple, convex, suborbicular or obscurely pentagonal, about 1 cm. or less long in the middle and conspicuously broader, cordate at the base; disc with a pair of minute calli at the base. Column stout, strongly dilated upward in front from below the middle, about 1–1.3 cm. long, terminated in the center by a very broad, rounded, cucullate lobe and with a smaller rounded lobule on each side.

Amazonas: East of Chachapoyas, between Tambo Ventillas and Piscohuañum, 3300–3400 meters, on grassy plains with scattered shrubs, between stones, *Weberbauer 4414* (type).—Cuzco: Prov. of Paucartambo, Pillahuata, 2750 meters, epiphyte, *Vargas 2181*. Same locality, 3400 meters, *Vargas 3012*.

Epidendrum scabrum Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 248. 1798; Lindl. Fol. Orch. Epidendrum 85, no. 271. 1853; Reichb. f. Bonpl. 4: 215. 1856; Cogn. Martius Fl. Bras. 3, pt. 5: 106. 1898. *Epidendrum scabrum* var. *parviflorum* Cogn. Martius Fl. Bras. 3, pt. 5: 107. 1898. *Epidendrum loxense* Lehm. & Kränzl. Engler Bot. Jahrb. 26: 469. 1899. *Epidendrum cardiophyllum* Kränzl. Engler Bot. Jahrb. 37: 523. 1906.

Plant variable, simple or sparingly branched. Stems stout or slender, ascending or arcuate, entirely or mostly concealed by close, tubular, pustulose leaf-sheaths, often exceeding 67 cm. in height. Leaves numerous, distichous, spreading, ovate to ovate-oblong or ovate-lanceolate, acute or acuminate and often apiculate, deeply clasping at the base, 2.5–5 cm. long, up to 1.8 cm. wide. Inflorescence much exceeding the leaves, racemose or more commonly paniculate, having an abbreviated peduncle with subparallel to widely spreading, many-flowered branches. Floral bracts lanceolate, acuminate, much shorter than the slender pedicellate ovary. Flowers small, campanulate to slightly spreading, sulphur-yellow to clear yellow. Dorsal sepal oblong-elliptic to oblanceolate-elliptic ("oblong"), up to about 9.5 mm. long, subacute and apiculate. Lateral sepals subequally long but broader, obliquely oblong-obovate, acute and apiculate, with a subapical keel, obliquely adnate to the column at the base. Petals cuneate-spatulate to linear-oblanceolate, acute to broadly obtuse, slightly shorter than the dorsal sepal. Lip adnate to the column up to its apex, equaling or slightly exceeding the sepals; lamina small, distinctly 3-lobed, cordate at the base, up to 4.8 mm. long in the middle and 6 mm. wide across the lateral lobes; lateral lobes obliquely suborbicular or round-ovate; midlobe more or less larger, quadrate or subquadrate, retuse and apiculate; disc with a pair of fleshy, complanate calli at the base and 3 more or less distinct thickened lines in front. Column large for the flower, abruptly dilated in front above the middle, about 7.6 mm. long.

Amazonas: Near Andimarcha and Chachapoyas, *Mathews 1063, 3200*.—Huánuco: Pillao and Muña, on rocky mountains, *Pavón s.n.* (type of *E. scabrum*). Playapampa, about 2700 meters, "wet rocky sphagnum slope," *Macbride 4887*. [Río] Huallaga, 3100–3200 meters, *Weberbauer 6828*.—Junín: Prov. of Tarma, mountains west of Huacapistana, 2600–3000 meters, open humid woods mingled with shrubs, *Weberbauer 2082* (type of *E. cardiophyllum*). Also Colombia and Ecuador (type of *E. scabrum* var. *parviflorum* and *E. loxense*).

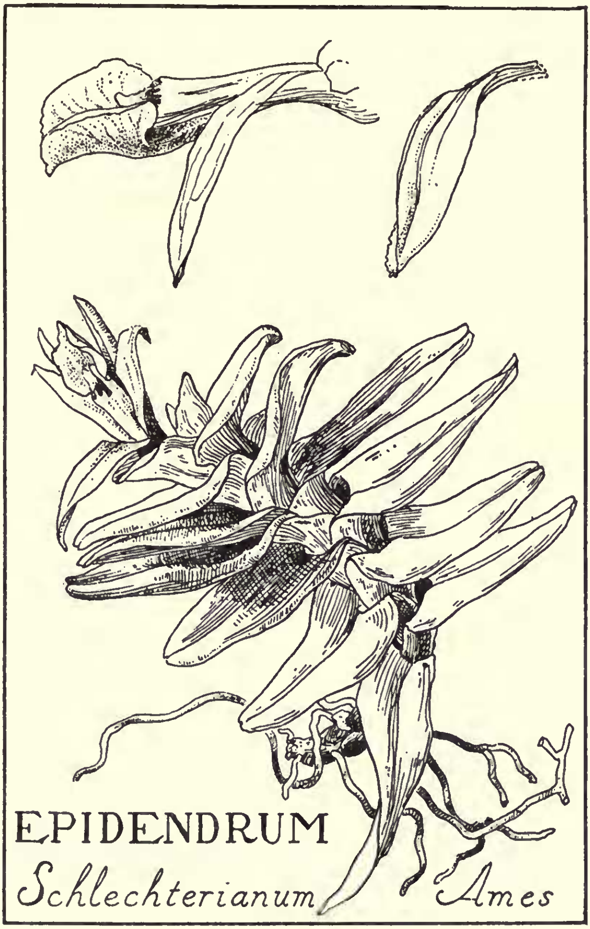


FIG. 98. *Epidendrum Schlechterianum* Ames. Plant; × 1. Flower parts; × 2. Drawn by Blanche Ames.

Epidendrum Schlechterianum Ames, Sched. Orch. 7: 9, fig. 1. 1924. *Nanodes discolor* Lindl. Bot. Reg. 18, t. 1541. 1832. *Epidendrum discolor* Benth. ex Kew Hand-list Orch. 105. 1896, not A. Rich. & Gal. *Epidendrum brevicaule* Schltr. Fedde Repert. Beih. 17: 30. 1922, not Schltr. 1921. Figure 98.

Plant dwarf, extremely variable as to vegetative and floral size and form of the flower parts, epiphytic or rarely terrestrial. Stems very short, approximate on a more or less abbreviated rhizome, spreading, entirely concealed by the closely imbricating leaves, rarely up to 7 cm. long. Leaves dense, distichous, horizontally spreading or recurved, with loose, densely imbricating sheathing (not articulated bases), oblong-ovate or elliptic-oblong to linear-oblong, broadly obtuse to bilobulate and apiculate at the apex, up to 3.2 cm. long and 8 mm. wide when expanded, fleshy, convex. Flowers 1 or more commonly 2, at the apex of the stems, sessile, small but large for the plant, yellow-green or bronzy-green to pale pink-purple. Dorsal sepal ovate-lanceolate to narrowly elliptic-lanceolate, acute or acuminate, apiculate, 9–18.6 mm. long, dorsally carinate. Lateral sepals subequal to the dorsal sepal, elliptic-lanceolate, very oblique with the center long-decurrent on the column at the base, acute or acuminate, with a high, thin, denticulate keel. Petals linear-lanceolate or linear-oblong, acute or acuminate, obliquely inserted on the column, a little shorter than the sepals. Lip adnate to the column up to its apex; lamina concave-conduplicate in natural position, simple, strongly cordate at the base, reniform to suborbicular-ovate when expanded, rounded and mucronate at the apex, fleshy, 4.5–9 mm. long in the middle and 5–11.6 mm. wide; disc naked. Column short or rather short, dilated upward in front, terminating on each side in a prominent, broadly and obliquely rounded, fleshy auricle, the retuse center dentate to lacerate.

Huánuco: Tingo María, 670 meters, *Carpenter 103a.*—Junín: Chanchamayo Valley, 1200 meters, *Schunke s.n.* Schunke Hacienda, above San Ramón, 1300–1700 meters, in dense forest, *Schunke A 49.* La Merced, Hacienda Schunke, about 1200 meters, *Macbride 5665.* Also Central America (Mexico to Panama, type of *E. brevicaule*), West Indies (Trinidad), and Brazil (type of *Nanodes discolor*).

Epidendrum Schlimii Reichb. f. Linnaea 22: 838. 1849; Reichb. f. Walp. Ann. Bot. 6: 361. 1862; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 14. 1953. *Epidendrum tenellum* Lindl. Fol. Orch. Epidendrum 44, no. 138. 1853.

Plant small, epiphytic, up to 14 cm. tall. Stems short, caespitose, spreading, slender, up to 13 cm. long, entirely concealed by rather close, fleshy, tubular sheaths which are leaf-bearing except near the base. Leaves several to numerous, distichous, widely spreading, linear-filiform, acute, triquetrous in section, clasping at the base, up to 3.5 cm. long. Inflorescence terminal, suberect to arcuate, up to 7 cm. or more long, with a short, inconspicuously bialate peduncle surmounted by a small, lanceolate, conduplicate, carinate spathe; rachis fractiflex, filiform, at each of the remote angles bearing an abbreviated, congested, few-flowered raceme or solitary flowers near the apex. Floral bracts similar to the spathe, a little shorter than the floral axis which they subtend. Flowers very small, membranaceous, pale reddish. Dorsal sepal obovate-oblong, acute and shortly apiculate, about 3.9 mm. long. Lateral sepals obliquely obovate, obtuse and subapically carinate, about equally long but much broader than the dorsal sepal. Petals cuneate-filiform, truncate at the apex, a little shorter than the sepals. Lip adnate to the column up to its apex; lamina simple, transversely oval, deeply cordate at the base, lightly retuse and apiculate in front, about 2 mm. long in the middle, 3.5–4 mm. wide, crenulate on the margins; disc with a pair of minute calli at the base and with 3 fleshy ridges in front. Column relatively large, slightly dilated upward in front, about 3 mm. or more long at the back.

Huánuco: Muña, about 2150 meters, *Macbride 3966.* Also Venezuela (type of *E. Schlimii*) and Colombia (type of *E. tenellum*).

Epidendrum Schlimii Reichb. f. var. **gracillimum** (Reichb. f. & Warsc.) C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 15. 1953. *Epidendrum gracillimum* Reichb. f. & Warsc. Allg. Gartenz. 22: 314. 1854.

Plant small, up to 19 cm. tall including the inflorescence, larger than the species. Leaves longer than those of the type, linear-filiform, about 4.5–6 cm. long. Branches of the panicle distinct and relatively elongate. Flowers very similar to those of the type, but the lip more or less distinctly 3-lobed or crenulate at the apex, with a shortened, transverse, bilobulate mid-lobe.

Peru: Habitat not recorded, *Warscewicz s.n.* (type of *E. gracillimum*).—Cuzco: Prov. of Convención, heights of Pintobamba, 2300 meters, epiphyte in low, damp forest, *Vargas 3268.*

Epidendrum sclerocladium Lindl. ex Reichb. f. Bonpl. 4: 326. 1856; Cogn. Martius Fl. Bras. 3, pt. 5: 51. 1898.

Plant large. Pseudobulbs and leaves apparently lacking in the type. Inflorescence paniculate, loosely and divaricately branching, exceeding 37 cm. in height; branches remote, loosely forking with widely spreading branchlets, minutely roughened, very loosely many-flowered. Floral bracts very small, triangular-lanceolate, much shorter than the pedicellate ovary. Flowers rather small, equal to those of *Epidendrum virgatum.* Sepals apparently oblong-lanceolate ("cuneate-lanceolate"), about 1.3 cm. long, acute or acuminate. Petals about equal to the sepals, subspatulate. Lip shortly adnate to the column; lamina deeply 3-lobed; lateral lobes triangular-lanceolate, curved forward or falcate, sharply acute, erect in natural position; mid-lobe much larger, from a short, cuneate claw abruptly dilated into a suborbicular-ovate limb, acute; disc traversed in the middle by a trisulcate callus, with thickened lateral veins. Column stout, minutely tridentate at the truncate apex, with a pair of small, incurved, broadly rounded auricles near the summit.

Peru: Habitat uncertain (perhaps Loreto), source of the Marañon River, *Warscewicz s.n.*

This description was prepared from drawings of the type from the Reichenbach Herbarium, supplemented by the original diagnosis and the later treatment.

Epidendrum Scutella Lindl. Bot. Reg. 30, Misc. 83, no. 2. 1844; Fol. Orch. Epidendrum 49, no. 154. 1853. *Epidendrum platyoon* Schltr. Fedde Repert. Beih. 9: 91. 1921; Mansf. Fedde Repert. Beih. 57: t. 120, nr. 473. 1929.

Plant robust, epiphytic. Stem simple or slightly branched, stout, up to over 30 cm. long, suberect to arcuate, leafy, entirely concealed by rather loose, tubular or infundibuliform leaf-sheaths. Leaves numerous, distichous, spreading, oblong, oblong-lanceolate, oblong-ovate to elliptic, subacute to obtusely bilobulate at the apex, clasping at the base, up to 13 cm. long and 3.5 cm. wide. Inflorescence terminal, abbreviated, 1- to 4-flowered, subtended by 1 or 2 large, conduplicate, semiorbicular spathes which are up to 5.5 cm. long. Floral bracts very small, ovate-triangular, much shorter than the elongate, pedicellate ovary. Flowers large, fleshy, greenish or greenish yellow, with spreading segments. Dorsal sepal oblong-lanceolate, obtuse or subacute, up to 3.6 cm. long. Lateral sepals similar to the dorsal sepal or a little broader, oblique, acute to acuminate. Petals very similar to the sepals and nearly as large, somewhat oblique. Lip adnate to the column up to its apex; lamina simple, suborbicular-oval, broadly obtuse to somewhat acute, shortly cordate at the base, about 2.6 cm. long in the middle and 2.2 cm. wide; disc with a pair of small calli at the base and a carinate-thickened midnerve. Column short, dilated upward, about 8 mm. long, with a pair of semiorbicular, crenulate auricles above.

Cajamarca: Chugur, northwest of Hualgayoc, 2700–2900 meters, *Weberbauer 4101* (type of *E. platyoon*). Also Ecuador (type of *E. Scutella*) and Colombia.

Epidendrum serpens Lindl. Benth. Pl. Hartweg. 149. 1844; Fol. Orch. Epidendrum 28, no. 87. 1853.

Plant dwarf, epiphytic, with a long-creeping, rooting rhizome which appears to be branching near the apex. Pseudobulbs very numerous, subapproximate, oblong-cylindric, up to 1.2 cm. long, obliquely curved in the dried plant, 2- to 3-leafed at the apex. Leaves ovate-lanceolate or elliptic-lanceolate, sharply acute, up to 3.7 cm. long and 1 cm. wide, coriaceous. Inflorescences terminal, aggregated, 1-flowered, shorter than the leaves. Flowers violet, rather large. Dorsal sepal narrowly ovate or ovate-lanceolate, acuminate. Lateral sepals ovate, acuminate. Petals linear-lanceolate, acute. Lip adnate to the column up to its apex; lamina simple, broadly ovate-cordate, acute, cochleate, serrulate; disc smooth. Column short, stout, terminating in a pair of transverse auricles. Capsule large, ellipsoid.

Peru: Chuquiribamba, in mountains, creeping among lichens, *Hartweg s.n.* (type).—Cajamarca, fide Schlechter, Fedde Repert. Beih. 9: 152. 1921.

This diagnosis was prepared by the aid of a photograph bearing an indistinct floral analysis from the Lindley Herbarium, supplemented by the descriptions.

Epidendrum smaragdinum Lindl. Bot. Reg. 24, Misc. 32, no. 44. 1838; Fol. Orch. Epidendrum 66, no. 208. 1853; Cogn. Martius Fl. Bras. 3, pt. 5: 104. 1898.

Plant slender, epiphytic, about 52 cm. or less tall. Stem simple, leafy, slender, entirely concealed by numerous close, tubular, leaf-bearing sheaths. Leaves distichous, spreading, lanceolate or linear-lanceolate, acute or acuminate, clasping at the base, up to 6.2 cm. long and 1.3 cm. wide, apparently very fleshy. Inflorescence terminal, nodding, shorter than the leaves, racemose, commonly with one or more side branches, densely few- to several-flowered. Floral bracts small, triangular-lanceolate or triangular-ovate, acuminate, squarrose. Flowers very small, green, with spreading segments. Dorsal sepal lanceolate-elliptic or linear-oblong ("oblong-lanceolate"), sharply acute and apiculate, about 6.5 mm. long. Lateral sepals very obliquely elliptic-lanceolate or semioval, acute and apiculate, about equally long but broader than the dorsal sepal. Petals elliptic-linear, acute ("acuminate"), a little shorter than the dorsal sepal, slightly oblique. Lip adnate to the column up to its apex; lamina transversely flabellate in outline, cuneate below with a minutely cordate base, subequally 3-lobed in front, with the lateral lobules rounded and the middle lobule acute, or truncate-retuse and apiculate, about 4.9 mm. long in the middle and 8 mm. wide across the anterior part; disc with a pair of small fleshy calli at the base and 3 fleshy ridges in front. Column short and stout, dilated upward in front, about 3 mm. long.

Loreto: Vicinity of Iquitos, 100 meters, *Klug 10107*. Also Demerara (type) and Brazil.

Epidendrum soratae Reichb. f. Xen. Orch. 3: 24. 1878.

Plant small to medium-sized, up to 56 cm. or more tall, epiphytic on trees or rocks. Stem slender to stout, commonly loosely branching (especially above), entirely or mostly concealed by tubular sheaths which are scarious and evanescent in the lower portions and leaf-bearing above. Leaves small, elliptic-lanceolate to linear-lanceolate, abruptly acute and apiculate, up to 4.2 cm. long and 8 mm. wide, mostly deciduous except near the apex of the branches. Inflorescences short, nodding, about 1–1.5 cm. long, several-flowered, densely flowered above. Floral bracts minute, triangular-lanceolate or ovate-lanceolate, much shorter than the slender pedicellate ovary. Flowers very small, greenish white, yellow or dull wine-red (sometimes spotted), with spreading segments. Dorsal sepal oblanceolate-oblong to obovate-oblong, acute or obtuse, up to 6 mm. long. Lateral sepals slightly longer and rather wider, obliquely obovate-oblong, acute and dorsally carinate at the apex. Petals oblanceolate-linear, more or less acute, almost equaling the dorsal sepal. Lip adnate to the column up to its apex; lamina transverse, reniform or ovate-reniform, cordate at the base, up to 3 mm. long in the center and 6 mm. wide, more or less distinctly 3-lobed in front; lateral lobes relatively large, dolabriform-suborbicular to aliform; mid-lobe shallow, lightly retuse and apiculate and either protuberant beyond the lateral lobes or not protuberant beyond the apices of the lateral lobes; disc with 2 minute calli at the base and a more or less fleshy line through the middle. Column slender below, abruptly dilated near the apex in front.

Cuzco: Prov. of Paucartambo, Tres Cruces, 3600 meters, *Vargas 2259*. Prov. of Urubamba, Tuncapata-Puyupata, 3200 meters, in wet forest, *Vargas 2928*. Prov. of Urubamba, near Wenner Gren ruins, 3400–3600 meters, in wet rainy forest, *Metcalf 30766*.—Puno: Prov. of Carabaya, below Ollachea, 2550 meters, on rocks, *Vargas 6934*. Prov. of Carabaya, between Ollachea and Ackopampa, 3450 meters, on rocky slopes with humus, *Vargas 6979*. Also Bolivia (type).

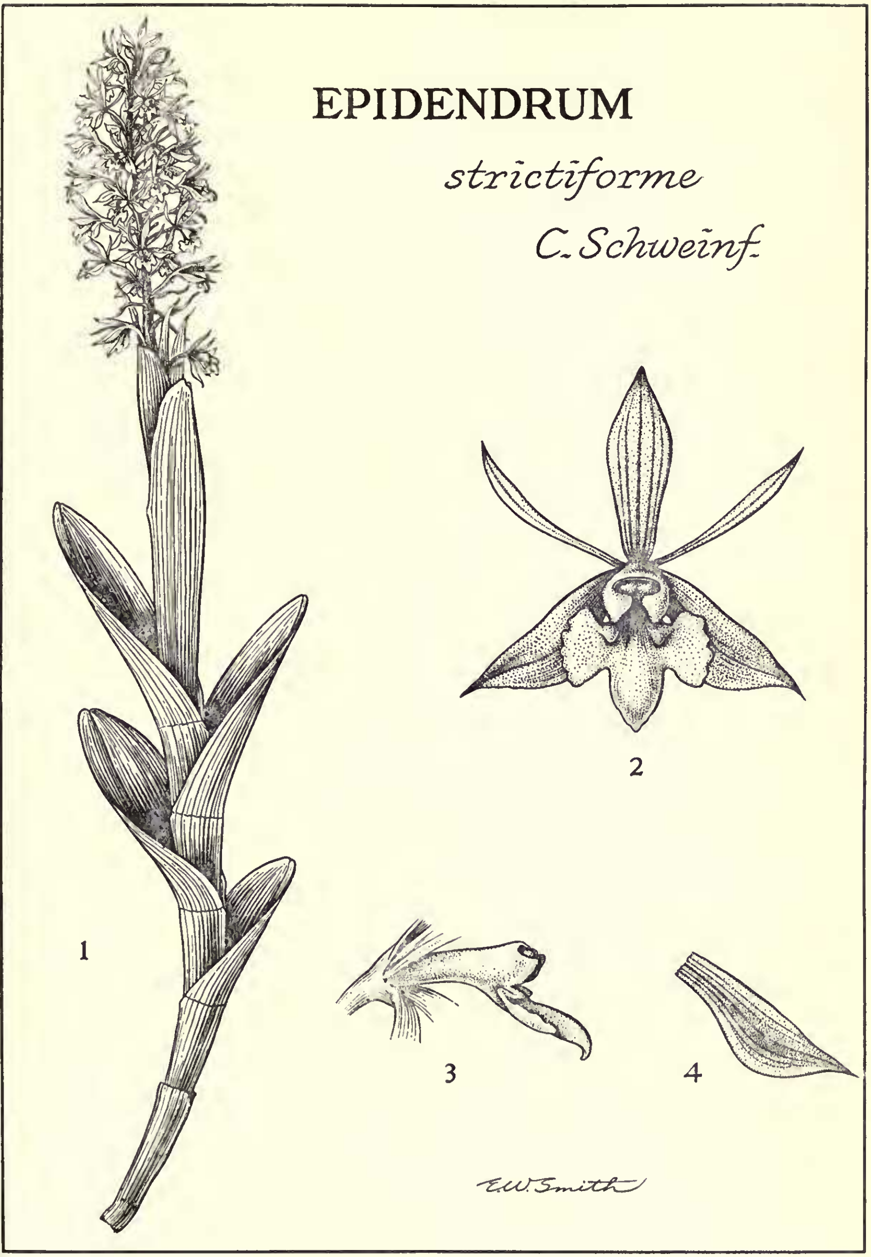
Epidendrum strictiforme C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 14: 58, t. 16. 1949. Figure 99.

Plant medium-sized, stout, epiphytic, up to 37 cm. tall. Stem entirely concealed by strongly complanate, tubular leaf-sheaths. Leaves 5, loosely distichous, ovate or oblong-ovate, rounded and minutely bilobulate at the apex, amplexicaul at the broad base, up to 7.5 cm. long and 3.4 cm. wide, spreading. Inflorescence erect, racemose above, about 20 cm. long; peduncle about 11 cm. long, entirely concealed by 2 or 3 strictly erect, conduplicate, imbricating spathes that are rounded to acute at the tip. Raceme densely many-flowered. Floral bracts lax, linear-lanceolate, the lower ones subequaling the slender pedicellate ovary. Flowers small, pale brownish green flushed with purple, spreading. Dorsal sepal oblanceolate or elliptic-oblanceolate, acute, about 9 or 10 mm. long. Lateral sepals obliquely oblong-oblanceolate, lightly sigmoid, acute or short-acuminate, a little longer than the dorsal sepal. Petals oblanceolate-linear, lightly incurved, acute or short-acuminate, about as long as the dorsal sepal. Lip adnate to the column up to its apex; lamina sharply 3-lobed, fleshy, cordate at the base, up to 5.8 mm. long in the center and 7.7 mm. wide across the lateral lobes; lateral lobes rounded-dolabriform, with irregularly crenate outer margins; mid-lobe ovate, acute, protuberant, very fleshy; disc with a pair of small fleshy, conical calli at the base. Column straight, dilated above in front, up to 7 mm. long at the back, produced on each side of the apex into an obliquely semiorbicular-ovate lobe.

Huánuco: Carpish, 2800 meters, on a tree in cloud forest, *Woytkowski 37014.*

Epidendrum strobiliferum Reichb. f. Nederl. Kruidk. Arch. 4: 332. 1858; Cogn. Martius Fl. Bras. 3, pt. 5: 174, t. 25, fig. 2. 1898. Figure 100.

Plant small to large, epiphytic, with an abbreviated rhizome. Stem commonly diffusely much branched (rarely simple when young), up to 30 cm. tall, with the more or less flexuous internodes entirely enveloped by close, tubular sheaths which are leaf-bearing except near the base of the stem or branches. Leaves distichous, spreading, numerous, elliptic-oblong (more rarely ovate-oblong or linear-oblong), acute to more usually obtuse or bilobulate, clasping at the base, up to 4.5 cm. long and 1 cm. wide (usually smaller), apparently fleshy. Inflorescences terminal on the branches, shortly racemose, few-flowered, up to 3.5 cm. long. Floral bracts very prominent, spathaceous, suborbicular-ovate, concave, imbricated and exceeding the pedicellate ovary when young. Flowers very small, green to white or reddish, with the segments strongly nervose and subparallel. Dorsal sepal oblong-lanceolate or elliptic-lanceolate, obtuse to acute, up to 4.2 mm. (rarely 5.3 mm.) long, subcarinate. Lateral sepals obliquely ovate-oblong to oblong-lanceolate, about as long as the dorsal sepal but distinctly broader, acute, dorsally carinate near the apex. Petals oblanceolate-linear, subacute to acute, nearly as long as the sepals. Lip adnate to the column up to its apex; lamina simple, cordate-triangular to ovate-cordate with more or less irregular margins, concave, acute to acuminate, up to 4 mm. long and 3 mm. wide when expanded; disc with a pair of minute calli at the base. Column very short and stout, dilated upward in front, with a conspicuous triangular tooth on each side of the apex and 2 smaller teeth


EPIDENDRUM
strictiforme
C. Schweinf.
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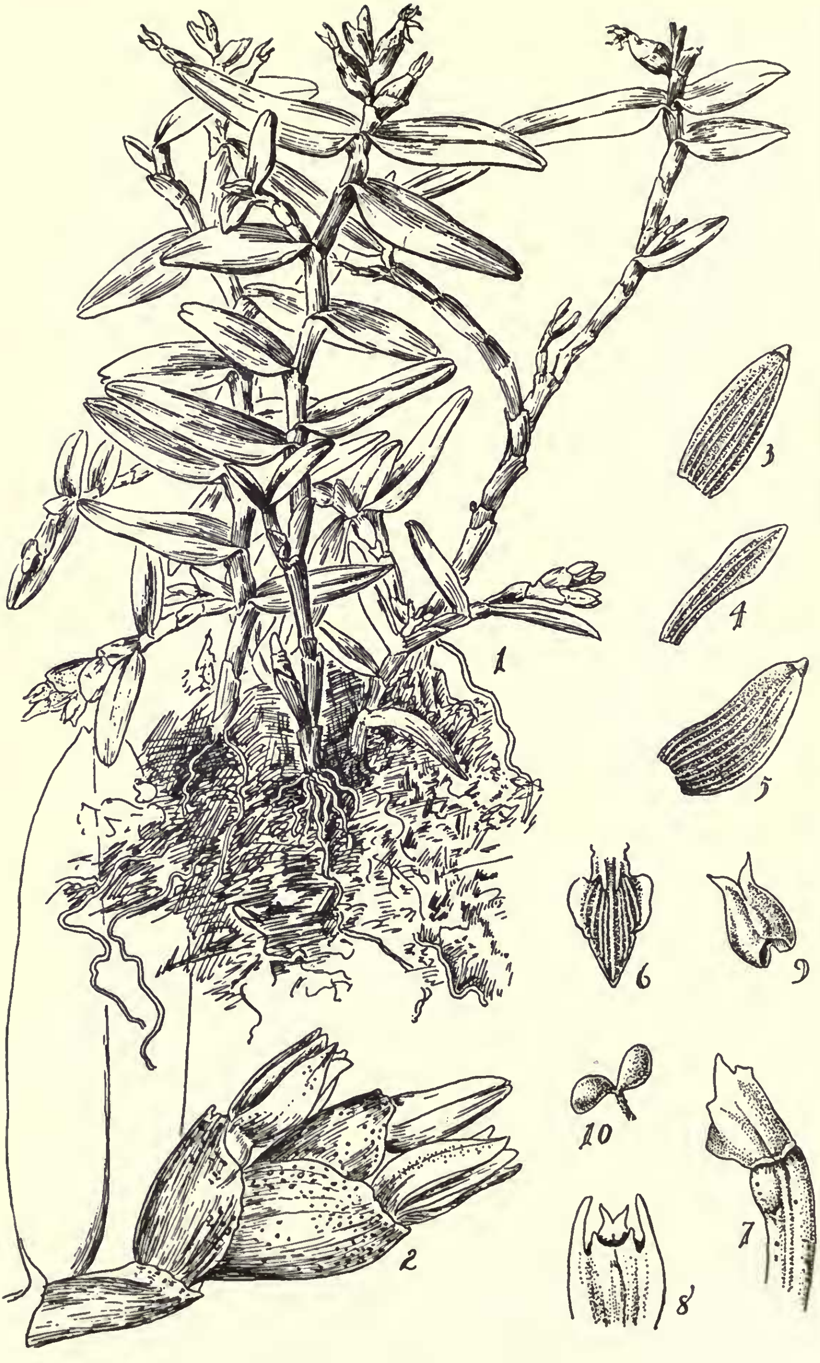
4
E.W. Smith

FIG. 99. *Epidendrum strictiforme* C. Schweinf. 1, plant; × 7/16. 2, flower from the front, expanded; × 2½. 3, column and lip from side, natural position; × 2½. 4, lateral sepal; × 2½.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in the retuse center. Ovary with a small, semiellipsoid vesicle at the summit beneath the lip.

Loreto: Valley of Río Marañon, San Isidro, near the mouth of Río Pastaza, 150 meters, in dense forest, *Killip, Smith & Dennis 29184*. On wooded banks of Río Itaya, above Iquitos, about 110 meters, *Killip & Smith 29291*. A widespread and rather variable species extending from southern Florida and Mexico through Central America and the West Indies to Surinam (type), Brazil and Peru.

Epidendrum subliberum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 144, t. 44. 1952. Figure 101.

Plant small, slender, branching, epiphytic, about 17.5 cm. tall from the base of the stem to the tip of an erect leaf. Stems about 10 cm. or less high, consisting of short, mostly strict branches; branches slender or somewhat thickened above, entirely concealed by imbricating, tubular sheaths of which the upper 3 or 4 are leaf-bearing. Leaves erect-ascending, linear, complicate and mucronate at the apex, clasping at the sessile conduplicate base, up to 7.5 cm. long and 5 mm. wide. Inflorescences terminal on the upper branches, solitary, pendent, racemose, about 8.6 cm. or less long; peduncle very short, bearing several small, lanceolate, long-attenuate bracts; raceme subdensely many-flowered, about 8 cm. or less long. Flowers very small, "dark blue," with wide-spreading or reflexed segments. Dorsal sepal oval or oblong-elliptic, obtuse, about 3.4 mm. long. Lateral sepals similar, subacute, lightly oblique, slightly broader above, a little longer than the dorsal sepal. Petals nearly as long as the lateral sepals but much narrower, obliquely lanceolate, subacute, with somewhat irregular margins. Lip adnate to the base of the column, transverse, from an abbreviated, broadly cuneate claw abruptly dilated into the lamina, about 4.2 mm. long; lamina distinctly 3-lobed in front, subcordate at the base, about 6 mm. wide, with irregular margins; lateral lobes relatively large, obliquely ovate-rotund, horizontally spreading; mid-lobe relatively small, semiorbicular, about 1 mm. long and 2 mm. wide at the base. Column small, about 2 mm. high.

Cuzco: Prov. of Paucartambo, Pillahuata, epiphyte in rain-forest, 3400 meters, *Vargas 3011*.

Epidendrum subreniforme C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 11: 117, t. 9, figs. 4–6. 1943. Figure 87.

Plant epiphytic, about 21.5 cm. high. Stem stout, simple (except for one abbreviated, ascending branch above), entirely concealed by distichous, tubular, complanate, leaf-bearing sheaths which are scarious except in the upper portion of the

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FIG. 100. *Epidendrum strobiliferum* Reichb. f. 1, plant; × 1. 2, inflorescence; × 4. 3, dorsal sepal; × 6. 4, petal; × 6. 5, lateral sepal; × 6. 6, lip; × 6. 7, column and upper part of ovary from side; × 10. 8, column, front-ventral view; × 10. 9, anther, enlarged. 10, pollinia, much enlarged. Original drawing by Blanche Ames, redrawn by G. W. Dillon.

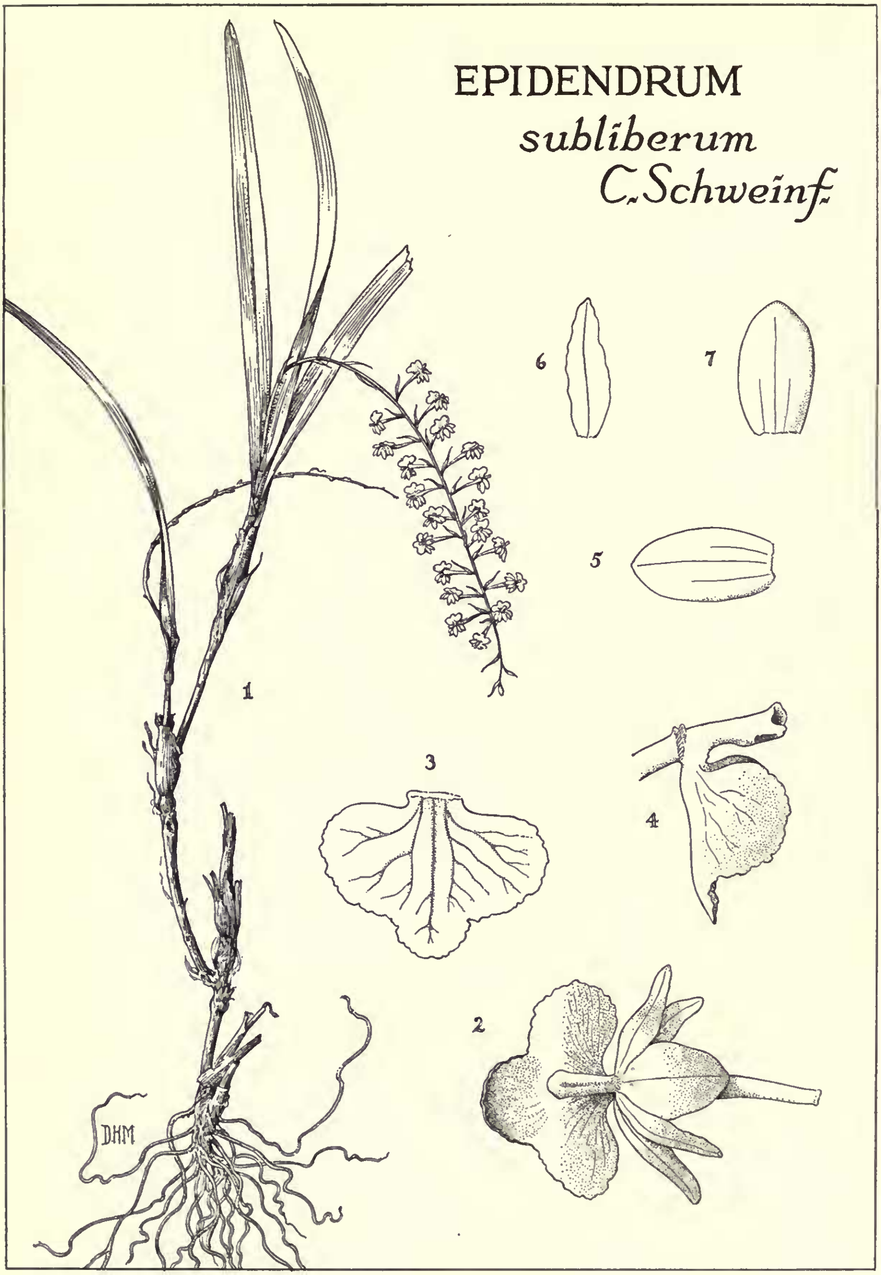
EPIDENDRUM
sublīberum
C. Schweinf.
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FIG. 101. *Epidendrum subliberum* C. Schweinf. 1, plant; × ⅞. 2, flower, natural position; × 5. 3, lip, expanded; × 5. 4, lip and column from side; × 5. 5, lateral sepal; × 5. 6, petal; × 5. 7, dorsal sepal; × 5.

stem. Leaves small, elliptic, acute, sessile and clasping at the base, spreading, up to 4.6 cm. long and 1.5 cm. wide, submembranaceous. Inflorescence terminal, abbreviated, recurved, loosely about 4-flowered. Flowers rather large, greenish yellow, with spreading segments. Dorsal sepal elliptic-lanceolate, acute, about 19 mm. long. Lateral sepals semi-oval or obliquely elliptic-lanceolate, shortly acuminate, distinctly longer and broader than the dorsal sepal, concave, carinate especially above the middle. Petals linear-oblanceolate, acute or subacute, a little shorter than the dorsal sepal. Lip adnate to the column up to its apex; lamina reniform in outline, subsimple, lightly retuse on each side, cordate at the base, somewhat retuse and bluntly apiculate in the middle of the broadly rounded apex, about 12 mm. long in the center and 25.8 mm. wide near the base; disc channelled through the middle and convex-spreading on each side, obscurely bicallose at the base. Column rather short, stout, strongly dilated upward in front and produced into a fleshy, subquadrate auricle on each side, about 12 mm. long to the tip of an auricle.

Huánuco: Cushi, about 1500 meters, on a small tree in the sun, *Macbride 4543.*

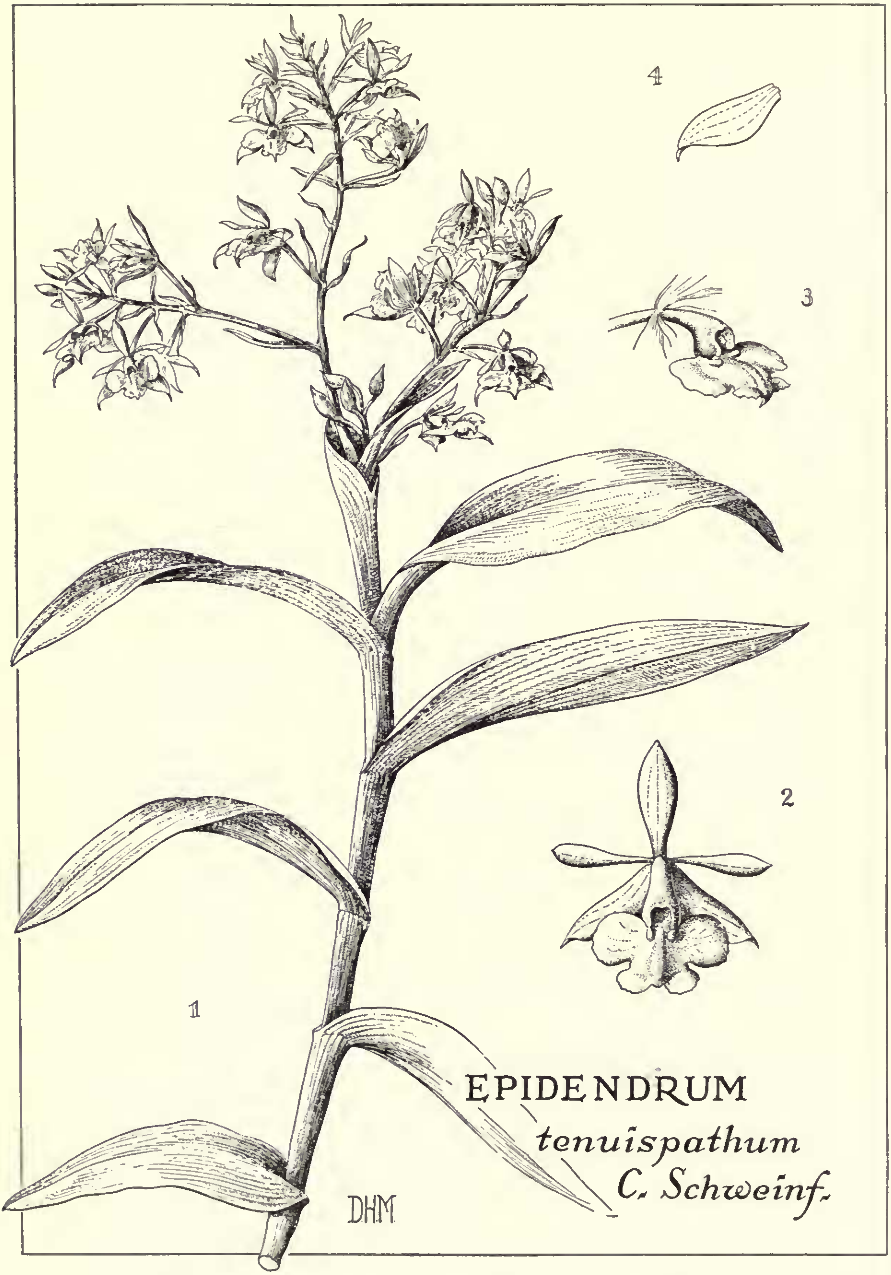
Epidendrum subreniforme C. Schweinf. var. **ramosum** C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 15. 1953.

Plant medium-sized, incomplete in my specimen. Stem slender, with several short, strict branches unlike the type. Leaves elliptic or oblanceolate-oblong, larger than in the species, up to 6.5 cm. long and 1.9 cm. wide. Inflorescences chiefly erect. Flowers rose-purple (instead of yellow), smaller than those of the species. Dorsal sepal elliptic, 1.5 cm. long. Lip adnate to the column up to its apex; lamina simple, semiorbicular-reniform, without any apicule, ecallose at the base, about 1 cm. long in the middle and 2.3 cm. wide. Column stout, dilated above, about 8 mm. long at the back.

Cuzco: Prov. of Convención, Sahuayaco, 1600 meters, epiphyte, *Vargas 6295.*

Epidendrum tenuispathum C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 15: 146, t. 45. 1952. Figure 102.

Plant tall, epiphytic, 0.6–0.9 meter high (according to the collector's notes). Stem stout, incomplete in the type, entirely concealed by the sheaths of the leaves, portion present 17.6 cm. long. Leaves distichous, apparently numerous, 4 cm. or less apart, widely spreading, lanceolate to elliptic-lanceolate or oblong-lanceolate, acute and minutely apiculate, amplexicaul below, about 8–13 cm. long, 2.3–2.9 cm. wide. Inflorescence terminal, erect, loosely paniculate, apparently lacking any free peduncle; rachis about 16 cm. long, subtended by a loose, scarious, conduplicate spathe about 6 cm. long. Floral bracts linear-lanceolate, scarious. Flowers rather small for the genus, with spreading segments, dark red with pink to white lip. Dorsal sepal elliptic-oblanceolate, subacute, about 1.5 cm. long and 5–5.6 mm. wide. Lateral sepals broadly and very obliquely elliptic-oblanceolate, acute, dorsally carinate with the keel produced into a prominent mucro, a little larger than the dorsal sepal. Petals obliquely oblanceolate-linear to linear-spatulate, more or less curved,


4
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EPIDENDRUM
tenuispathum
C. Schweinf.
DHM

FIG. 102. *Epidendrum tenuispathum* C. Schweinf. 1, plant; × ½. 2, flower, expanded; × 1. 3, column and lip, three quarters view; × 1. 4, lateral sepal; × 1.

acute at the sometimes rounded apex, nearly as long as the dorsal sepal but less than half as wide. Lip adnate to the column up to its apex; lamina conspicuously 3-lobed near the middle, cordate at the base, about 9 mm. long through the middle and 14–17.5 mm. wide across the lateral lobes when expanded; lateral lobes obliquely rounded-dolabriform, with the outer margins irregularly crenulate; mid-lobe short, much broader than long, above dilated into a pair of short, rounded, crenulate lobules; disc bicallose at the base, thickened through the middle. Column strongly and abruptly dilated in front from below the middle, rounded-retuse at the apex, about 6.8 mm. long at the back.

Huancavelica: Prov. of Tayacaja, Ampurco woods, on trail between Salcabamba and Surcubamba, 2900 meters, common epiphyte on many tree trunks, *Stork & Horton 10427*.

Epidendrum Tessmannii Mansf. Notizbl. Bot. Gart. Mus. Berlin 10: 239. 1928.

Plant epiphytic, variable, with an abbreviated rhizome. Stems fascicled, up to 55 cm. high, entirely concealed by numerous, rather close, tubular, verruculose sheaths which appear to be leaf-bearing except near the base and are scarious and often evanescent in the lower portion of the plant. Leaves distichous, several to numerous, widely spreading, on the upper half of the stems (those below deciduous), oval to elliptic-oblong (rarely ovate-oblong or oblong), obtuse to rounded at the apex, clasping at the base, up to 12 cm. long and 3.2 cm. wide, coriaceous. Inflorescence terminal, consisting of a short arcuate raceme or a congested panicle, the peduncle more or less concealed by 1 or 2 prominent, conduplicate, imbricated, often evanescent spathes; racemes subdensely up to 19-flowered. Floral bracts ovate to lanceolate-ovate, very small. Flowers small, white to pale pink, with spreading segments. Sepals and petals tubular-revolute, rather fleshy. Dorsal sepal oblong-oblanceolate, acute to obtuse, 11.8–15.6 mm. long. Lateral sepals similar but definitely broader, strongly oblique, acute to obtuse. Petals linear-oblanceolate, subacute or obtuse, nearly as long as the sepals. Lip adnate to the column up to its apex; lamina convex, sharply 3-lobed, deeply cordate at the base, lightly retuse and more or less apiculate at the apex, 7 mm. or less long in the center, 14–15 mm. wide across the lateral lobes; lateral lobes obliquely suborbicular-dolabriform, usually with crenulate-irregular outer margins; mid-lobe more or less smaller than the lateral lobes, obcordate-reniform with rounded lobules; disc with 2 small complanate calli at the base and 1 to 3 fleshy ridges in front. Column long, abruptly dilated above the middle in front, 9.8–13 mm. long, terminating on each side in a fleshy, transverse, subquadrate, retuse auricle.

Junín: Colonia Perene, about 680 meters, in woods, *Killip & Smith 25046*. Colonia Perene, along Río Perene, near "Hacienda 3," about 600 meters, in forest, *Killip & Smith 25173*. La Merced, about 700 meters, in wooded valley, *Killip & Smith 23748*. East of Quimirí Bridge, near La Merced, 800–1300 meters, in dense forest, *Killip & Smith 23942*.—Loreto: Puerto Meléndez, below Pongo de Manseriche, 155 meters, in climax forest on the banks of Río Marañon, *Tessmann 4762* (type).

Epidendrum thrombodes Reichb. f. Linnaea 41: 79. 1876.

Plant large and stout, with the habit of *Epidendrum aromaticum* Batem., but stouter. Vegetative parts not described. Inflorescence terminal, paniculate, large. Flowers loose, yellow spotted with brownish purple, rather small for the alliance, with spreading or reflexed segments. Sepals cuneate-oblong or oblong-oblanceolate, acute, apiculate, about 1.7 cm. long, the lateral sepals somewhat oblique. Petals similar, shortly acuminate. Lip adnate to the column at its base, a little shorter than the rest of the perianth; lamina sharply 3-lobed; lateral lobes obliquely rhombic, acute in front, rounded or subcordate at the base; mid-lobe somewhat smaller than the lateral lobes, broadly rhombic from a short cuneate claw, densely covered with verrucose or papillose veins; disc with a pair of broad, low, approximate calli (separated by a carinate line) in the middle between the lateral lobes. Column lightly dilated above and below, with a pair of apical, porrect, minute, round-triangular auricles. Anther deeply bilobed.

Peru: Habitat not recorded; introduced by Veitch & Company.

This diagnosis was compiled from a drawing with floral analysis from the Reichenbach Herbarium, supplemented by the original description.

Epidendrum tricarinatum Rolfe, Kew Bull. (1917) 81.

Plant large, erect or lightly arcuate, up to 1 meter tall. Stems entirely concealed by close, tubular leaf-sheaths. Leaves subremote, distichous, oblong or elliptic-oblong ("lanceolate-oblong"), subobtuse to minutely bilobed at the apex, sessile and clasping at the base, up to 9 cm. long, 1.3–1.8 cm. wide, ascending-spreading, thickly coriaceous. Inflorescence terminal; peduncle elongate, slender, entirely concealed by close, tubular, scarious sheaths; raceme short, arcuate-nodding, several- to "many"-flowered. Floral bracts narrowly triangular-lanceolate, long-acuminate, much shorter than the slender pedicellate ovary. Flowers rather small, bright purple with a whitish keel on the lip, the segments spreading. Dorsal sepal lanceolate-elliptic ("elliptic-oblong"), acute or subacute, about 1.5 cm. long. Lateral sepals similar, acute, apparently a little broader than the dorsal sepal. Petals elliptic-oblanceolate, subacute, a little shorter than the sepals. Lip adnate to the column up to its apex, distinctly surpassing the rest of the perianth; lamina deeply 3-lobed; lateral lobes obliquely cuneate, fimbriate at the apex, about 5.5 mm. long; mid-lobe obcordate, bilobed, about 9 mm. long, fimbriate at the apex; disc conspicuously 3-carinate with the middle (longer) keel entire and the lateral ones denticulate. Column up to 6 mm. long.

Peru: Habitat not recorded, *Forget s.n.*

The above diagnosis was prepared from a photograph of the type specimen, supplemented by the original description.

Epidendrum tricrure Reichb. f. & Warsc. Bonpl. 2: 112. 1854.

Plant large, vegetative parts lacking in the type. Inflorescence over 27 cm. high. Peduncle over 20 cm. long (incomplete), slender, almost entirely concealed by close, elongate-tubular sheaths. Raceme erect, densely many-flowered, with the rachis about 6.3 cm. long. Floral bracts lanceolate, acuminate, much shorter than the elongate, cuniculate, pedicelled ovary. Flowers small, about equaling those of *E. Lindenii* Lindl. [=*E. dichotomum* Presl], lilac. Sepals subequal, "oblong" or oblong-lanceolate, acute, apiculate, about 1 cm. long, the lateral ones being dimidiate. Petals narrower than the sepals, minutely crenulate above. Lip adnate to the column up to its apex; lamina suborbicular in outline, sharply 3-lobed, deeply cordate at the base; lateral lobes semiorbicular-dolabriform, with the rounded outer margin denticulate toward the base and lacerate above; mid-lobe transversely flabellate, nearly as wide as the basal portion (across the lateral lobes), 4-lobed, with the outer margins fimbriate-lacerate; disc with a large depressed, 3-lobed callus, of which the smaller lateral lobes are prostrate on the lateral lobes of the lip and the much larger, obcordate, apiculate mid-lobe extends onto the middle part of the mid-lobe of the lip. Column slender, dilated above, with the decurrent angles of the clinandrium serrulate.

Peru: Habitat not recorded, *Warscewicz s.n.*

The above diagnosis was made with the aid of a drawing of *E. tricrure* with floral analysis from the Reichenbach Herbarium, together with the original description.

Epidendrum triflorum Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 248. 1798.

Junín: Prov. of Tarma, near Curis, Huichay, Tarmatambo and Camcham, in steep places, *Pavón s.n.*

This is an unidentifiable species.

Epidendrum unifoliatum Schltr. Fedde Repert. Beih. 9: 95. 1921; Fedde Repert. Beih. 57: t. 122, nr. 478. 1929.

Plant epiphytic, low, about 10 cm. high, with a much abbreviated rhizome. Stems approximate, entirely concealed by 2 obtuse, evanescent sheaths, 1-leaved, about 5 cm. long. Leaf elliptic-oblong, subacute, up to 4.5 cm. long and 1.8 cm. wide, rather fleshy, more or less spreading. Inflorescence abbreviated, about 1.2 cm. long, subumbellate, densely 6- to 10-flowered above, with the short peduncle subtended by a small obtuse spathe. Floral bracts ovate, subobtuse, much shorter than the pedicellate ovary. Flowers rather small, somewhat fleshy, with widely spreading segments. Dorsal sepal elliptic-oblong ("oblong"), rather obtuse, about 1.1 cm. long. Lateral sepals apparently oblong-elliptic, oblique, apiculate, a little larger than the dorsal sepal. Petals obliquely oblong-linear ("linear-ligulate"), slightly dilated upward, obtuse, nearly equaling the sepals. Lip adnate to the column up to its apex; lamina suborbicular-quadrate in outline, sharply 3-lobed in front, cordate at the base, deeply emarginate at the apex, about 5 mm. long and 9 mm. wide; lateral lobes obliquely and very broadly dolabriform ("oblong-semiquadrate"), triangular-acute in front, with the outer margins subdenticulate; mid-lobe quadrate, bilobed with rounded lobules, slightly surpassing the lateral lobes; disc shortly bicallose at the base. Column stout, slightly dilated upward, about 6 mm. long.

Loreto: Near Moyobamba, *Filomeno s.n.*

This description was drawn from the diagnosis of the type, supplemented by the floral analysis cited.

Epidendrum ventricosum Lindl. Hook. Journ. Bot. 3: 86. 1841; Fol. Orch. Epidendrum 44, no. 137. 1853. *Epidendrum pachygastrium* Kränzl. Fedde Repert. 1: 183. 1905.

Plant medium-sized, epiphytic, fruticose (branching near the base). Stems entirely concealed by tubular sheaths which are short and leafless at the base of the branches and relatively elongate and leaf-bearing above, with the sheaths up to 2.7 cm. long; branches (including the inflorescence) up to 27.7 cm. long, loosely 3- to 6-leaved. Leaves distichous, oblong-linear to linear-lanceolate, obtuse or acute and apiculate, clasping at the base, up to 10.3 cm. long and 1.6 cm. wide (much shorter near the base), erect or ascending, thickly coriaceous. Inflorescence terminal, erect to gently arcuate, loosely racemose above, few- to many-flowered, up to 11.8 cm. long including the terminal flower; peduncle about 5 cm. or less long, subtended and often concealed by an oblong, conduplicate, obtuse spathe which is 5.5 cm. or less long. Floral bracts minute. Flowers about 15 or less (sometimes as few as 3), erect, campanulate, purple. Dorsal sepal oblong-ovate, elliptic-ovate or elliptic-oblong, acute, about 8–13 mm. long. Lateral sepals similar, oblique, dorsally carinate. Petals equally long, narrowly linear, acute to subobtuse. Lip adnate to the column and forming with it a large saccate cavity; lamina simple, ovate-cordate, acute or subacute; disc with a pair of approximate, more or less long calli at the base and a median, lightly elevated line. Column rather long, retuse at the apex.

Peru: Habitat not recorded, *Mathews 1869* (type of *E. ventricosum*).—Amazonas: Valley of the Utcubamba River, south of Chachapoyas, 3000 meters, epiphyte on branches of sclerophyllous vegetation of shrubs mingled with trees, *Weberbauer 4298* (type of *E. pachygastrium*).—Apurimac: Prov. of Abancay, Ampay, 3200–3600 meters, epiphyte, *Vargas 8395*.

Epidendrum vernixium Reichb. f. & Warsc. Bonpl. 2: 110. 1854.

Stem stout, sheathed. Leaves oblong-ligulate, obtuse, 3.8 cm. long, 1.3 cm. or more wide, shining above. Inflorescence about 8.3 cm. long, many-flowered, with the peduncle much thinner than the stem. Floral bracts linear-triangular, many times shorter than the pedicellate ovary. Flowers small, subfleshy. Dorsal sepal oblong, acute. Lateral sepals similar. Petals narrowly oblanceolate ("oblong-ligulate from a linear base"), obtuse, minutely lobulate and subdenticulate. Lip 3-lobed, lateral lobes suborbicular, deeply cordate, very minutely denticulate; midlobe from a narrower base dilated above, retuse with a little tooth in the middle at the apex; disc with the 5 median veins and those of the lateral lobes rugulose-thickened and with a single papilla on each side near the sinus between the lobes. Column with the forward angles falcate-produced.

Peru: Habitat not recorded, *Warscewicz s.n.*

This concept was considered too indefinite to be included in the key.

Epidendrum vesicicaule L. O. Wms. Bot. Mus. Leafl. Harvard Univ. 9: 13, t. 3, figs. 1–3. 1940.

Plant medium-sized, terrestrial or epiphytic, apparently with a creeping rhizome, up to 27 cm. high. Stems much branched, entirely or mostly concealed by loose, tubular leaf-sheaths. Leaves distichous, more or less remote, spreading-ascending, lanceolate, linear-lanceolate or oblong-lanceolate, more or less falcate, acute or acuminate, up to 6.8 cm. long and 1.1 cm. wide. Flowers commonly in pairs at the tips of the branches, pale green with a whitish lip, the pedicellate ovaries clasped at the base by 1 or 2 conduplicate, foliaceous spathes. Parts of perianth spreading. Dorsal sepal narrowly elliptic-lanceolate, obtuse or acute, up to 1.6 cm. long and 4.2 mm. wide. Lateral sepals oblong-ovate, acute, very oblique at the base, shorter and distinctly broader than the dorsal sepal. Petals falcate, oblanceolate-linear, obtuse, nearly as long as the dorsal sepal. Lip adnate to the column up to its apex; lamina simple, suborbicular, rounded above, cordate at the base, with somewhat irregular margins, 6.5–10 mm. long through the center and 8–14 mm. wide; disc with a pair of small, fleshy, complanate calli at the base. Column short, stout, dilated in front, about 8 mm. long at the back.

Junín: Prov. of Tarma, Agua Dulce, 2400 meters, on the ground in highland wood, in shade, *Woytkowski 35455*. Utcuyacu, 1900 meters, on tree trunks in low forest, *Woytkowski 35353*. Ecuador (type).

Epidendrum vincentinum Lindl. Hook. Journ. Bot. 3: 88, 309, t. 11. 1841; Cogn. Urban Symb. Antill. 6: 526. 1910; C. Schweinf. Bot. Mus. Leafl. Harvard Univ. 16: 16. 1953. *Epidendrum serricardium* Schltr. Fedde Repert. Beih. 19: 218. 1923.

Plant small or rather small, lax, with an abbreviated rhizome, up to about 18 cm. high. Stem slender, more or less branched, entirely concealed by tubular, leaf-bearing sheaths which are evanescent on the lower portions of the plant. Leaves distichous, linear or more commonly elliptic-linear, acute and apiculate, sessile at the cuneate, clasping base, up to 3 cm. long and 5 mm. wide. Inflorescence a several- to many-flowered panicle (rarely a few-flowered raceme), up to about 10.5 cm. high, with divaricate, remotely few-flowered branches. Floral bracts minute. Flowers very small, pale yellow or purplish green often tinged with red. Dorsal sepal elliptic-lanceolate or oblong-lanceolate, subacute to acute, up to 4 mm. long. Lateral sepals very obliquely oblong-ovate, acute, about as long as the dorsal sepal but broader. Petals narrowly linear or oblanceolate-linear, obtuse to acute, nearly as long as the sepals. Lip adnate to the column up to its apex; lamina reniform or cordate-semiorbicular, more or less apiculate at the broadly rounded apex, with denticulate margins, about 2 mm. long in the center, up to 3.5 mm. wide; disc bicallose at the base, with 3 more or less prominent lines in front. Column relatively large and stout, dilated above in front, up to 2.5 mm. long at the back.

Cuzco: Prov. of Paucartambo, San Pedro and Sta. Isabel, 1400 meters, on a stony tract, *Vargas 006793*. West Indies (type of *E. vincentinum*) and Costa Rica (type of *E. serricardium*).

Epidendrum viride Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 244. 1798.

Huánuco: Near Pozuzo, in open woods on trees, *Pavón s.n.*

This species has not been identified.

Epidendrum volubile Ruíz & Pav. Syst. Veg. Fl. Peruv. et Chil. 1: 247. 1798.

Junín: Prov. of Tarma, near Acobamba, in steep places, *Pavón s.n.*

This is an obscure species.

Epidendrum Weberbauerianum Kränzl. Fedde Repert. 1: 87. 1905.

Plant large, robust, up to 1 meter high. Stems caespitose, entirely concealed by close, tubular sheaths which are leafless and sometimes evanescent below and leaf-bearing in the upper portion of the plant. Leaves distichous, spreading, 7 or more, oval to elliptic-oblong, obtuse to rounded at the apex, clasping at the base, up to 7.7 cm. long and 3.5 cm. wide. Inflorescence terminal, erect, racemose above; peduncle about 27.7 cm. long, almost entirely concealed by close, elongate-tubular, scarious sheaths; raceme subdensely many-flowered, with the rachis nearly 11 cm. long. Floral bracts narrowly lanceolate-triangular, long-acuminate, many times shorter than the slender, elongate-clavate pedicellate ovary. Flowers rather large for the alliance, lilac-rose, with membranaceous, spreading sepals and petals. Dorsal sepal narrowly lanceolate-elliptic, acute, about 2 cm. long. Lateral sepals obliquely oblong-lanceolate, acute, slightly longer and broader than the dorsal sepal. Petals very similar to the dorsal sepal and about as long, lightly oblique. Lip adnate to the column up to its apex, about as long as the sepals; lamina distinctly 3-lobed, cordate at the base, about 8 mm. or less long in the middle and 6–7 mm. wide near the base when expanded; lateral lobes rounded, deeply dentate; mid-lobe porrect, obovate-oblong or oblanceolate-oblong, rhombic-dilated near the apex, acute, deeply dentate above; disc traversed by 4 large, fleshy ridges which are confluent above, the central pair being much the longest. Column with a denticulate clinandrium.

Huánuco: Prov. of Huamalies, mountains southwest of Monzón, 1600–1800 meters, in woods consisting of trees and shrubs, *Weberbauer 3571.*

This diagnosis was compiled from an excellent photograph of the type, supplemented by the description.

Epidendrum xanthinum Lindl. Bot. Reg. 30, Misc. 18, no. 11. 1844; Fol. Orch. Epidendrum 73, no. 229. 1853; Cogn. Martius Fl. Bras. 3, pt. 5: 130. 1898; Hook. f. Bot. Mag. 124, t. 7586. 1898. *Epidendrum ellipticum* Grah. var. *flavum* Lindl. Ann. Nat. Hist. 4: 382. 1840.

Plant large, stout, terrestrial, with an abbreviated rhizome, up to 90 cm. or more tall. Stems caespitose, entirely concealed by close, tubular sheaths which are leaf-bearing except near the base. Leaves distichous, spreading, oval to oblong or ovate-oblong, obtuse or retuse at the apex, clasping at the base, up to 12 cm. long and 3 cm. wide, fleshy-coriaceous, several to numerous. Inflorescence terminal, elongate, floriferous above, up to 75 cm. long, entirely or mostly concealed by close, tubular-elongate, scarious sheaths; flower cluster a short, densely many-flowered, simple or rarely branched raceme. Floral bracts narrowly triangular-lanceolate, long-acuminate, much shorter than the slender, elongate pedicellate ovary. Flowers numerous, small, golden yellow (rarely orange), membranaceous, with spreading segments. Dorsal sepal elliptic-oblong or oblanceolate-oblong, acute, up to 12 mm. long. Lateral sepals similar but slightly larger, somewhat oblique. Petals variable, oblanceolate-oblong to obovate-oblong, abruptly acute or obtuse, often with irregular apical margins, commonly similar to the dorsal sepal. Lip adnate to the column up to its apex, subequaling the sepals or somewhat longer; lamina sharply 3-lobed, cordate at the base, suborbicular in outline; lateral lobes obliquely dolabriform, with the outer margins irregularly dentate to lacerate; mid-lobe subequally large or larger, broadly cuneate-flabellate from a cuneate or subquadrate base, more or less bilobed, sharply dentate to lacerate in front; disc at the base with a prominent ovate-subquadrate, lobulate-plicate, mucronate callus. Column dilated above in front, up to 8 mm. long; clinandrium denticulate.

Cuzco, fide Schlechter, Fedde Repert. Beih. 9: 153. 1921.—San Martín: Near Tingo María, 625–1100 meters, *Allard 21685*. Brazil (type of *E. xanthinum* and *E. ellipticum* var. *flavum*), and perhaps Venezuela and Colombia.

Epidendrum xylostachyum Lindl. Bot. Reg. 31, Misc. 70, no. 19. 1845; Fol. Orch. Epidendrum 77, no. 241. 1853.

Plant robust. Stem stout, simple, exceeding 22 cm. in length, entirely enveloped by close, tubular, scabrous sheaths. Leaves distichous, spreading, several to numerous, elliptic-oblong (rarely oval or oblong), obtuse to subacute and mucronulate, clasping at the base, coriaceous, up to 17.3 cm. long and 4.1 cm. wide. Inflorescence terminal, racemose, several- to many-flowered nearly to the base, loosely flowered in the course of development, shorter than the leaves (but apparently a little longer than the uppermost blade), up to 20 cm. long, suberect to gently arcuate, with the rachis more or less flexuous. Floral bracts prominent, ovate, cucullate, acute. Flowers fleshy, rather small, greenish white, with spreading segments. Dorsal sepal ovate-oblong ("oblong"), concave, acute, about 1.5 cm. long. Lateral sepals very similar, oblique. Petals narrowly elliptic-oblong, apparently shorter and narrower than the sepals. Lip adnate to the column up to the apex; lamina simple, cordate-ovate or triangular-cordate, strongly concave, obtuse, about 1 cm. long in the middle. Column short, stout, with an entire clinandrium.

Junín, ex Kränzl. fide Schlechter, Fedde Repert. Beih. 9: 153. 1921. Colombia (type) and Ecuador.

This description was prepared chiefly by means of a photograph from the Lindley Herbarium bearing the type collection (*Linden 1280*, from Colombia), which appears to have an immature inflorescence, as well as from parts of another collection (Peru[=Ecuador], *Jameson*), which shows a larger leaf and a longer mature inflorescence. The type description was also consulted.

Epidendrum xytriophorum Reichb. f. & Warsc. Bonpl. 2: 112. 1854.

This concept was described only from the summit of a flowering stem including the inflorescence. Peduncle mostly concealed by elongate-tubular sheaths. Raceme densely many-flowered, with the arcuate rachis about 10 cm. long. Floral bracts triangular with a subulate apex, many times shorter than the pedicellate ovary. Perianth membranaceous in the dried state. Sepals elliptic-lanceolate, acute, about 1.2 cm. long, spreading. Lip adnate to the column up to its apex; lamina deeply 3-lobed, suborbicular in outline, about 6 mm. long in the center and 10 mm. wide across the lateral lobes; lateral lobes dolabriform-suborbicular or "quadrate," with the somewhat broader and rounded outer margin lacerate-dentate (more deeply above); mid-lobe transverse, broadly flabellate, retuse or lightly bilobed in front with the lobules incised-dentate, almost as broad as the basal portion; disc with an ovate-oblong, lobulate callus (terminated by a central keel) between the lateral lobes, projecting onto the base of the mid-lobe. Column about 5 mm. long, with denticulate lateral wings of the clinandrium.

Peru: No habitat designated, *Warscewicz s.n.*

This concept appears to be referable to some other species, perhaps to *E. xanthinum* Lindl. or to *E. incisum* Reichb. f. & Warsc. It was described chiefly from a drawing of this species, from the Reichenbach Herbarium.

Epidendrum yatapuense Barb. Rodr. Vellosia 1, ed. 2: 123. 1891; Cogn. Martius Fl. Bras. 3, pt. 5: 74, t. 22, fig. 1. 1898. *Epidendrum laxum* Poepp. & Endl. Nov. Gen. ac Sp. 2: 2. 1837–38; Lindl. Fol. Orch. Epidendrum 57, no. 176. 1853, not *Epidendrum laxum* Sw. (1788). *Epidendrum macrothyrsis* Lehm. & Kränzl., Engler Bot. Jahrb. 26: 472. 1899.

Plant epiphytic, lax, extremely variable, small to large, with an elongate, branched rhizome producing scattered short stems. Stems terete below, more or less complanate above, up to 17 (rarely 20) cm. long, entirely or mostly concealed by commonly imbricating sheaths which are close, tubular and evanescent in the lower part and looser, infundibuliform and leaf-bearing above. Leaves 2–4, distichous, more or less approximate on the upper portion of the stem, very variable in form, elliptic or oblong-elliptic to oblanceolate or linear-oblanceolate (sometimes linear-lanceolate), acute or acuminate with a deciduous apical mucro, narrowed to a deeply clasping base, up to 13 cm. long and 3 cm. wide, more or less coriaceous. Inflorescence terminal, elongate, lax or nodding above, very loosely paniculate, up to 90 cm. long; peduncle complanate, narrowly bialate, 1- to several-sheathed below; panicle with short, remote, distichous, few-flowered branches which are sometimes compound. Flowers small, variable in size, greenish or greenish yellow, often tinged with brown or red, with spreading segments. Dorsal sepal oblong-elliptic (rarely elliptic or linear-lanceolate), acute and mucronate, up to 10 mm. long. Lateral sepals commonly slightly longer and more or less broader, obliquely oblong-lanceolate (rarely linear-lanceolate or ovate lanceolate), narrowed above with an acute and mucronate apex. Petals linear, often slightly broader above, acute, a little shorter than the dorsal sepal. Lip adnate to the column up to its apex, about as long as the sepals or longer; lamina sharply 3-lobed near the middle, cordate at the base, lateral lobes erect and embracing the column in natural position and the mid-lobe lightly recurved, about 9 mm. or less long in the middle; lateral lobes aliform-semiovate, acute or obtuse; mid-lobe porrect, very fleshy, subterete or linear-triangular to triangular, acute or subacute. Column abbreviated, dilated above in front, terminating on each side in an oblique, retuse auricle, about 2 mm. or less long at the back.

Cajamarca: Prov. of Jaën, valley of Río Tabaconas, 900–950 meters, *Weberbauer 6154*.—Huánuco: Near Cuchero (Cochero), on eastern subandine slope, in woods, *Poeppig s.n.* (type of *E. laxum*) —Loreto: Gamitanacocha, Río Mazán, 100–125 meters, on river bank, *Schunke 124*. Vicinity of Iquitos, 100 meters, epiphyte in dense forest, *Klug 10065* (form with small flowers and less acuminate lateral sepals).—San Martín: Tingo María, 625–1100 meters, *Allard 22594*. Zepelacio near Moyobamba, 1200–1600 meters, epiphyte in mountain forest, *Klug 3571*. Also Brazil (type of *E. yatapuense*), Ecuador (type of *E. macrothyrsis*), British Guiana and Trinidad.